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First Semester 2013
Compliance Monitoring Report
Lawrence Livermore National Laboratory
Site 300

Technical Editors

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September 30, 2013

*Weiss Associates, Emeryville, California

Environmental Restoration Department

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Acknowledgements

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1. Introduction

This Compliance Monitoring Report (CMR) summarizes the Lawrence Livermore National Laboratory (LLNL) Site 300 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Action compliance monitoring activities performed during January through December 2013. The report is submitted in compliance with the Compliance Monitoring Plan (CMP)/Contingency Plan (CP) for Environmental Restoration at Lawrence Livermore National Laboratory Site 300 (Dibley et al., 2009a) and CMP/CP Addendum (MacQueen et al., 2013). The Eastern GSA treatment facility post-shutdown monitoring requirements (Holtzapple, 2007) are also included in this report.

During the reporting period of January through December 2013, approximately 5 million gallons of ground water and 45 million cubic feet of soil vapor were treated at Site 300, removing approximately 4.8 kilograms (kg) of VOCs, 48 grams (g) of perchlorate, 630 kg of nitrate, 83 g of Research Department Explosive (RDX), 0.077 g of a mixture of tetrabutyl orthosilicate (TBOS) and tetrakis (2-ethylbutyl) silane (TKEBS) and 17 g of total uranium (Table Summ-1).

Since remediation began in 1991, approximately 411 million gallons of ground water and 766 million cubic feet of soil vapor have been treated, removing approximately 580 kg of VOCs, 1.3 kg of perchlorate, 13,000 kg of nitrate, 1.8 kg of RDX, 9.5 kg of TBOS/TKEBs, and 0.034 kg of total uranium (Table Summ-2).

2. Extraction and Treatment System Monitoring and Ground and Surface Water Monitoring Programs

Section 2 presents the monitoring results for the Site 300 remediation systems, ground water monitoring network, and surface water sampling and analyses. These results are presented and discussed by operable unit (OU) as follows:

2.1. General Services Area OU 1

2.2. Building 834 OU 2

2.3. Pit 6 Landfill OU 3

2.4. High Explosives Process Area (HEPA) OU 4

2.5. Building 850/Pit 7 Complex OU 5

2.6. Building 854 OU 6

2.7. Building 832 Canyon OU 7

2.8. Site-Wide OU 8 (Building 833, Building 801/Pit 8, Building 845/Pit 9, and Building 851)

The locations of the Site 300 OUs 1 through 8 are shown on Figure 2-1. The Pit 2, 8, and 9 Landfills (OU 8) are discussed in Section 3.

In accordance with the revised 2009 CMP/CP requirements, post-only concentration maps and isoconcentration contour maps depicting primary and secondary COC data will be presented

in the annual CMR report along with hydraulic capture zones for all HSUs where ground water elevation and concentration data are contoured.

Treatment facility operations and maintenance issues that occurred during the first semester 2013 and influent and effluent analytical data collected during the first semester 2013 are included in this report. Treatment facility pH data collected during the first semester 2013 are presented in Appendix A. Ground water and surface water monitoring analytical data and ground water elevation measurements for the entire calendar year 2013 will be presented in the annual report. Analytical data from the analysis of soil samples will be presented in the annual report.

2.1. General Services Area (GSA) OU 1

The GSA OU consists of the Eastern and Central GSA areas.

The source of contamination in the Eastern GSA was abandoned debris burial trenches that received craft shop debris. Leaching of solvents in the debris resulted in the release of VOCs to ground water.

A ground water extraction and treatment system (GWTS) operated in the Eastern GSA from 1991 to 2007 to remove VOCs from ground water. VOC-contaminated ground water was extracted from three wells (W-26R-03, W-25N01, and W-25N-24), located downgradient from the debris burial trenches, at a combined flow rate of 45 gallons per minute (gpm). The extracted ground water was treated in three 1,000-pound (lb) granular activated carbon (GAC) units that removed VOCs through adsorption. The treated effluent water was discharged to nearby Corral Hollow Creek.

Remediation efforts in the Eastern GSA have successfully reduced concentrations of TCE and other VOCs in ground water to below their respective Maximum Contaminant Level (MCL) cleanup standards set in the GSA Record of Decision (ROD) (United States [U.S.] Department of Energy [DOE], 1997). The Eastern GSA ground water extraction and treatment system was shut off on February 15, 2007 with the U.S. Environmental Protection Agency (EPA), Regional Water Quality Control Board (RWQCB), and California Department of Toxic Substances Control (DTSC) approval. As required by the GSA ROD, ground water monitoring was conducted for five years after treatment facility shutdown to determine if VOC concentrations rise or "rebound" above MCL cleanup standards. The results of the monitoring that indicated that VOC concentrations had remained below cleanup standards in the five-year post shutdown monitoring period, were presented at the February 24, 2012 Remedial Project Manager's (RPM) Meeting. The regulatory agencies agreed that cleanup of the Eastern GSA was complete, monitoring and reporting could cease, and that close out documentation should be submitted. Therefore, the Eastern GSA will no longer be discussed in the CMRs.

A map of the Eastern GSA, showing the locations of monitor and extraction wells and the treatment facility is presented on Figure 2.1-1.

At the Central GSA, chlorinated solvents, mainly trichloroethylene (TCE), were used as degreasing agents in craft shops, such as Building 875. Rinse water from these degreasing operations was disposed of in dry wells. Typically, dry wells were gravel-filled holes about three to four feet deep and two feet in diameter. The Central GSA dry wells were used until 1982. In 1983 and 1984, these dry wells were decommissioned and excavated.

The Central GSA GWTS has been operating since 1992 removing VOCs from ground water. Contaminated ground water is extracted from eight wells (W-7I, W-875-07, W-875-08, W-873-07, W-872-02, W-7O, W-7P, and W-7R) at an approximate combined flow rate of 2.0 to 3.0 gpm. The Central GSA GWTS began receiving partially treated water from the Building 830-Distal South (830-DISS) facility at the end of the first semester 2007, increasing the flow rate to approximately 5.0 to 6.0 gpm. The current GWTS configuration includes particulate filtration, air stripping to remove VOCs from extracted water, and GAC to treat vapor effluent from the air stripper. Treated ground water is discharged to the surrounding natural vegetation using misting towers. Treated vapors are discharged to the atmosphere under permit from the San Joaquin Valley Unified Air Pollution Control District.

The Central GSA soil vapor extraction and treatment system (SVTS) began operation in the GSA adjacent to the Building 875 dry well contaminant source area in 1994 removing VOCs from soil vapor. Soil vapor is extracted from wells W-875-07, W-875-08, W-875-09, W-875-10, W-875-11, W-875-15 and W-7I, and at a combined total flow rate of approximately 35 standard cubic feet per minute (scfm). Simultaneous ground water extraction in the vicinity lowers the elevation of the water table and maximizes the volume of unsaturated soil influenced by vapor extraction. The current SVTS configuration includes a water knockout chamber, a rotary vane blower, and four 140-lb vapor-phase GAC columns arranged in series. Treated vapors are discharged to the atmosphere under a regulatory permit from the San Joaquin Valley Unified Air Pollution Control District.

A map of the Central GSA, showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.1-2.

2.1.1. Central GSA Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.1.1.1. Central GSA Facility Performance Assessment

The monthly ground water and soil vapor discharge volumes and rates and operational hours for the first semester of 2013 are summarized in Table 2.1-1. The total volume of ground water and vapor extracted and treated and masses removed during the reporting period is presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester of 2013 are presented in Table 2.1-2. The pH measurement results are presented in Appendix A.

2.1.1.2. Central GSA Operations and Maintenance Issues

The following maintenance and operational issues interrupted continuous operations of the Central GSA GWTS and SVTS during the first semester of 2013:

- Extraction wells W-7P and W-7R were secured to protect against damage caused by freezing temperatures from December 13 to February 25.
- The GWTS was secured from December 20 to January 7 to protect against freeze damage.

- The GWTS automatically shut down on January 14. Some freeze damage was discovered and repaired and the facility was restarted on January 23.
- The SVTS was shut down from March 2 to March 4 due to a site-wide power outage.
- The GWTS was offline from March 7 until March 18 while maintenance was performed on the misting towers and pipeline.
- The GWTS was secured on April 18 in order to perform electrical work as part of the transfer pump upgrades, which required "Lock Out – Tag Out" of the electrical system. Construction and testing and verification of the modified transfer pump and control system were completed, and the system was restarted on May 6.
- The GWTS was secured from June 18 to June 19 for routine compressor maintenance.

2.1.1.3. Central GSA Compliance Summary

The Central GSA GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge during the first semester 2013. The Central GSA SVTS system operated in compliance with San Joaquin Valley Air Pollution Control District permit limitations.

2.1.1.4. GSA Facility Sampling Plan Evaluation and Modifications

The Central GSA treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The treatment facility sampling and analysis plan is presented in Table 2.1-3. No modifications were made to the plan during this reporting period.

2.1.1.5. GSA Treatment Facility and Extraction Wellfield Modifications

During the first semester 2013, modifications were made to the CGSA GWTS to replace the transfer pump and associated controls to enable better control of the volume of water discharged. The existing treatment facility effluent misting towers were also upgraded to allow continued operation until the new misting towers are built. No other modifications to the GWTS, SVTS, or the extraction wellfield during this reporting period.

2.1.2. GSA Surface Water and Ground Water Monitoring

The sampling and analysis plans for ground water monitoring at the GSA are presented in Table 2.1-4. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; sixteen required analyses were not performed because the wells were dry or there was insufficient water in the wells to collect the samples and four required analyses were not performed due to inoperable pumps. The pumps in wells CON2, W-35A-11, W-7A, and W-7C were not operable during second quarter. The pumps in well CON2 and W-7C were replaced in May 2013 and August 2013, respectively. The pump replacements for wells W-35A-11 and W-7A are being scheduled.

2.1.3. Central GSA Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.1.3.1. Central GSA Mass Removal

The monthly ground water and soil vapor mass removal estimates for the first semester of 2013 are summarized in Table 2.1-5. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.1.3.2. GSA Contaminant Concentrations and Distribution

At the Central GSA, VOCs are the only COCs in ground water and soil vapor. During the first semester 2013, the following VOCs were detected: trichloroethene (TCE), tetrachloroethene (PCE), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (1,2-DCE), trans-1,2-DCE and, trichlorofluoromethane (Freon 11). TCE is the most prevalent VOC detected in Central GSA ground water.

There are three primary HSUs in the Central GSA:

- Qt-$Tnsc_1$ HSU, a shallow water bearing zone in the western portion of the Central GSA. This HSU includes saturated Qt deposits, and the $Tnbs_2$ sandstone and $Tnsc_1$ siltstone/claystone bedrock units that subcrop beneath the Qt.
- $Tnbs_1$ HSU, a deeper regional aquifer within the western portion of the Central GSA which consists of $Tnbs_1$ sandstone bedrock.
- Qal-$Tnbs_1$ HSU, a shallow water bearing zone within the eastern portion of the Central GSA. In the eastern portion of the Central GSA (near the sewage treatment pond), Qt deposits and the $Tnbs_2$ and $Tnsc_1$ bedrock units are not present. Qal deposits directly overlie the shallow $Tnbs_1$ bedrock that comprises the Qal-$Tnbs_1$ HSU in this area.

A VOC plume is present in Qt-$Tnsc_1$ and Qal-$Tnbs_1$ HSU ground water in the Central GSA. Prior to remediation, the maximum total VOC concentration detected in Central GSA ground water was 272,000 µg/L (Building 875 dry well pad area extraction well W-875-07, 1992). Although the current maximum total VOC concentration of 450 µg/L (W-7I, May) still resides in the Building 875 dry well area, it has declined by three orders-of-magnitude. While the majority of VOCs detected in this and other Building 875 dry well area well samples consist of TCE, other VOCs detected in this area during the first semester 2013 included PCE, 1,1-DCE, cis-1,2-DCE, and trans-1,2-DCE. Well W-875-07 was not sampled during the first semester 2013 due to insufficient water. Of the VOCs detected in Central GSA ground water in the Building 875 dry well area during the first semester 2013, TCE, PCE, 1,1-DCE, and cis-1,2-DCE were detected at concentrations above their MCL cleanup standards.

TCE soil vapor concentrations in the Building 875 dry well area ranged from 0.027 to 0.54 parts per million on a volume per volume basis ($ppm_{v/v}$) during the first semester 2013. These vapor concentrations have decreased significantly from the historic maximum TCE concentration of 600 $ppm_{v/v}$ in W-875-07 that was measured in 1994.

Outside the Building 875 dry well area, the majority of VOCs detected during the first semester 2013 consisted of TCE, with minor concentrations of PCE, 1,1-DCE, cis-1,2-DCE,

trans-1,2-DCE, and Freon 11. Of these VOCs, only TCE and PCE were present above their MCL cleanup standards. During the first semester 2013, total VOC concentrations (primarily TCE with minor PCE) in downgradient monitor well W-CGSA-1736 at the eastern edge of the Central GSA VOC plume decreased from a historic maximum of 14 µg/L in 2002 to a concentration of 4.4 µg/L (May).

During the first semester 2013, VOCs were also detected in two offsite monitor wells, W-35A-01 and W-35A-10. In monitor well W-35A-01, VOCs were detected at a first semester 2013 maximum concentration of 78 µg/L (June) consisting of TCE (72 µg/L), PCE (4.3 µg/L), cis-1,2-DCE (0.68 µg/L), and 1,1-DCE (1.3 µg/L). Only TCE was detected above its MCL cleanup standard. The historic maximum VOC concentration detected in monitor well W-35A-01 was 545 µg/L (1991). In monitor well W-35A-10, VOCs were detected at a first semester 2013 maximum concentration of 18 µg/L (June) consisting of TCE (9.4 µg/L) and Freon 11 (8.6 µg/L); only TCE was detected above its MCL cleanup standard. The historic maximum VOC concentration detected in monitor well W-35A-10 was 86 µg/L (1994).

2.1.3.3. GSA Remediation Optimization Evaluation

At the Central GSA, ground water extraction continues to capture the highest concentrations in ground water. Remediation efforts have reduced VOC concentrations in Central GSA ground water from a historic maximum of 272,000 µg/L in 1992 (W-875-07) to 450 µg/L (W-7I; January) during the first semester 2013. At the eastern edge of the VOC plume, VOC concentrations continue to decrease in monitor well W-CGSA-1736. Well W-CGSA-2708, a planned extraction well for the northern plume area, had a total VOC concentration of 15 µg/L during the first semester 2013 (June).

VOCs are currently detected in only two offsite wells, W-35A-01 and W-35A-10, located within 50 and 100 feet of the site boundary, respectively. VOC concentrations in well W-35A-01 have decreased from a historic maximum of 545 µg/L (1991) to first semester 2013 concentration of 78 µg/L (June). VOC concentrations in this well vary depending on sampling/purging method used. The 3-VES method is used to sample this well because this method yields the highest results. VOC concentrations in well W-35A-10 have decreased from a historic maximum of 86 µg/L (1994) to a first semester 2013 concentration of 18 µg/L (June).

During the first semester 2013, more VOC mass was removed at Central GSA by ground water extraction than by soil vapor extraction. During the first semester 2013, 120 g of VOCs were removed from ground water and 85 g of VOCs were removed from vapor. During the past several years, more VOC mass is removed by soil vapor extraction than by ground water extraction at this facility. However, during the first semester 2013, this trend was reversed in part because vapor concentrations in extraction well W-7I have decreased by two orders of magnitude since 2011.

The Central GSA treatment facility effluent misting system upgrade and relocation is in process. Planning is also underway for a wellfield expansion in the northern VOC plume area as recommended in the GSA Five-Year Review (Valett et al., 2011). This expansion will include the conversion of monitor well W-CGSA-2708 to a ground water extraction well and the possible installation of two injection wells to handle the ground water removed from this new extraction well. As mentioned in the Five-Year, further optimization of the Central GSA vapor treatment system during the next five years may include pneumatic communication and rebound testing, and periodic reconfiguration of the extraction and air inlet wells.

As described in the 2012 Annual CMR, the Eastern GSA OU will no longer be discussed in this report.

2.1.3.4. GSA OU Remedy Performance Issues

There were no new issues that affect the performance of the cleanup remedy for the GSA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.2. Building 834 OU 2

The Building 834 Complex has been used to test the stability of weapons and weapon components under various environmental conditions since the 1950s. Past spills and piping leaks at the Building 834 Complex have resulted in soil and ground water contamination with VOCs and TBOS/TKEBs. Nitrate concentrations in Building 834 ground water that exceed the MCL cleanup standard (45 milligrams per liter [mg/L]) are likely the result of a combination of natural sources and septic system leachate. In addition, a former underground diesel storage tank released diesel to the subsurface.

The Building 834 OU is informally divided into three areas: the core, leachfield (septic system), and distal areas (Figure 2.2-1). The core area generally refers to the vicinity of the buildings and test cells in the center of the Building 834 Complex where the majority of contaminant releases occurred. The leachfield area is located immediately southwest of the core area. The distal (T2) area refers to the area downgradient (south) of the core and leachfield areas. A map of Building 834 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.2-1.

The Building 834 GWTS and SVTS began operation in 1995 and 1998, respectively. These systems are located in the Building 834 core area. The ground water extraction wellfield removes VOCs, nitrate, and TBOS/TKEBs from ground water within the Tpsg HSU and the SVTS removes VOCs from soil vapor. Due to the very low ground water yield from individual ground water extraction wells (<0.1 gpm), the GWTS and SVTS have been operated simultaneously in batch mode. Although the GWTS can be operated alone, the SVTS is not operational without ground water extraction due to the upconing of the ground water in the well that covers the well screen and prevents soil vapor flow.

The current extraction wellfield consists of 13 dual extraction wells for both ground water and soil vapor. Ten extraction wells (W-834-B2, -B3, -D4, -D5, -D6, -D7, -D12, -D13, -J1, and -2001) are located within the core area and three (W-834-S1, -S12A, and -S13) in the leachfield area. Extraction well W-834-D5 is connected to the facility but has not been used for extraction since the facility was restarted in October 2004 because the capture area is similar to the capture area of extraction well W-834-D13. Ground water and soil vapor extraction well W-834-2001 was added to the system in March 2007. Extracted ground water from this well contains dissolved-phase diesel related to the former underground diesel storage tank. The GWTS extracts ground water at an approximate combined flow rate of 0.23 gpm and the SVTS extracts soil vapor at a combined flow rate of approximately 103 scfm. The current GWTS configuration includes floating hydrocarbon adsorption devices to remove the floating silicon oil, TBOS/TKEBs, and floating diesel (if any), followed by aqueous-phase GAC to remove VOCs, dissolved-phase TBOS/TKEBs, and diesel from ground water. Nitrate-bearing treated effluent is

then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses. The current SVTS configuration includes vapor-phase GAC for VOC removal. Treated vapors are discharged to the atmosphere under an air permit issued by the San Joaquin Valley Unified Air Pollution Control District.

Since 2005, a long-term enhanced *in situ* bioremediation treatability test has been taking place at the distal T2 Area. This testing has included biostimulation to transform ground water from oxidizing to reducing conditions and bioaugmentation with KB-1™, a natural non-pathogenic microbial consortium capable of complete dechlorination of TCE to ethene. This long-term test is described in Sections 2.2.3.3 and 2.2.3.4.

2.2.1. Building 834 OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modification.

2.2.1.1. Building 834 OU Facility Performance Assessment

The monthly ground water and soil vapor discharge volumes and rates and operational hours for the first semester of 2013 are summarized in Table 2.2-1. The total volumes of ground water and vapor extracted and treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester of 2013 are presented in Tables 2.2-2 through 2.2-4. The pH measurement results are presented in Appendix A.

2.2.1.2. Building 834 OU Operations and Maintenance Issues

The following maintenance and operational issues interrupted continuous operations of the Building 834 GWTS and SVTS during the first semester of 2013:

- Extraction wells W-834-S1, W-834-12A, and W-834-S13 and the GWTS/SVTS were secured to protect against freeze damage on December 13 and December 17, respectively and restarted on February 12.
- The systems were shut down from March 2 to March 4 due to a site-wide power outage.
- The systems were shut down on May 28 due to site power maintenance.

2.2.1.3. Building 834 OU Compliance Summary

The Building 834 GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. The Building 834 SVTS operated in compliance with the San Joaquin Valley Air Pollution Control District permit limitations.

2.2.1.4. Building 834 OU Facility Sampling Plan Evaluation and Modifications

The Building 834 treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.2-5. No modifications were made to the plan during this reporting period.

2.2.1.5. Building 834 OU Treatment Facility and Extraction Wellfield Modifications

No modifications to the treatment facility or to the extraction wellfield were made during this reporting period.

2.2.2. Building 834 OU Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.2-6. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During this reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; sixty-eight required analyses in 25 wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples.

2.2.3. Building 834 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal, analysis of contaminant distribution and concentration trends, remediation optimization evaluation, and performance issues.

2.2.3.1. Building 834 OU Mass Removal

The monthly ground water and soil vapor mass removal estimates for the first semester of 2013 are summarized in Table 2.2-7. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.2.3.2. Building 834 OU Contaminant Concentrations and Distribution

At the Building 834 OU, VOCs (primarily TCE but also PCE, cis-1,2-DCE, 1,1,1-TCA and chloroform) are the primary COCs detected in ground water; TBOS/TKEBs and nitrate are the secondary COCs. These COCs have been identified in two shallow HSUs: (1) the Tpsg perched water-bearing gravel zone, and (2) the underlying Tps-$Tnsc_2$ perched horizon.

2.2.3.2.1. VOCs Concentrations and Distribution

Although the overall extent of VOCs in the Building 834 OU ground water and soil vapor has not changed significantly, the maximum concentrations have decreased by more than one order-of-magnitude since remediation began in the mid 1990s. VOCs detected in Building 834 area ground water consist primarily of TCE and cis-1,2-DCE. Other VOCs including PCE, 1,1-DCE, 1,1,2-TCA, trans-1,2-DCE, Freon 113, vinyl chloride, and chloroform have also been detected, albeit in much smaller concentrations during the first semester 2013. The compound, cis-1,2-DCE is the breakdown product of TCE microbial dechlorination under anaerobic conditions.

Core Area

VOC concentrations and distribution in ground water and soil vapor in the Tpsg and Tps $Tnsc_2$ HSUs in the Building 834 core area are discussed below.

The Building 834 core area continues to exhibit the highest VOC concentrations in ground water and soil vapor. Twenty-five wells (16 monitor and nine dual extraction wells) are screened in the Tpsg HSU, where active remediation has reduced total VOC ground water concentrations from a historic maximum of 1,100,000 µg/L (all TCE, monitor well W-834-D5, 1988) to a first

semester 2013 maximum of 29,000 µg/L (February) in nearby core area extraction well W-834-C5. These VOCs included 20,000 µg/L TCE and 8,600 µg/L cis-1,2-DCE.

During the first semester 2013, the highest TCE detection in the core area Tpsg HSU was 20,000 µg/L in W-834-C5 (February). The historic maximum PCE concentration in Tpsg HSU ground water was 10,000 µg/L in monitor well W-834-D3 (1993). During the first semester 2013, PCE had decreased to below the reporting limit in this well (February). The first semester 2013 maximum detection of PCE was 130 µg/L (W-834-D13, March). The historic maximum cis-1,2-DCE detection was 540,000 µg/L in extraction well W-834-D4 (1990). During the first semester 2013, cis-1,2-DCE had declined to 5,200 µg/L in this well. The first semester 2013 maximum cis-1,2-DCE detection was 8,600 µg/L (W-834-C5, February) in a sample collected toward the end of the treatment facility freeze protection shutdown period. The historic maximum 1,1,1-TCA concentration was 33,000 µg/L (extraction well W-834-J1, 1991). During the first semester 2013, 1,1,1-TCA was not detected above the reporting limit in this well or any other well in the Building 834 OU. The historic maximum chloroform concentration was 44 µg/L in monitor well W-834-1709 (2009). During the first semester 2013, chloroform was not detected in this or any core area well, in either the Tpsg or the underlying Tps-Tnsc$_2$ HSU. In the core area, underlying the Tpsg HSU, the Tps-Tnsc$_2$ HSU continues to have the highest VOC ground water concentrations in the Building 834 OU and at Site 300. Five wells (four monitor and one dual extraction) are screened in the Tps-Tnsc$_2$ HSU where the historic maximum total VOC detection was 250,000 µg/L (mostly TCE, 2002) and the first semester 2013 maximum total VOC detection was 170,000 µg/L (mostly TCE, February). Both maxima are from the same monitor well, W-834-A1. This latter result is within the range of concentrations measured in this well during recent years. In July 2012, a duplicate sample from this well detected an historic maximum total VOC concentration of 300,000 µg/L for this well, but the routine sample collected at the same time and analyzed by a different laboratory contained 200,000 µg/L. The 200,000 µg/L detection is more consistent with recent trends.

In the Tps-Tnsc$_2$ HSU, PCE was below the reporting limit in W-834-A1 and in all core area wells screened in this HSU. The historic maximum PCE detection was 7,900 µg/L (W-834-A1, 2001). Another monitor well screened in the core area Tps-Tnsc$_2$ HSU, W-834-U1, had a historic total VOC maximum concentration of 145,000 µg/L (almost all TCE, 2000) and a first semester 2013 maximum concentration of 52,000 µg/L (February). In 2012, 130,000 µg/L total VOCs (February 8, 2012) was detected in this well. However, subsequent samples from this well had concentrations of 61,000 µg/L and 62,000 µg/L total VOCs (February 15 and July 26, 2012, respectively). The first semester 2013 result of 52,000 µg/L is: (1) more consistent with recent results and general decreasing total VOC trend observed in this well since 2000, and (2) substantiates the presumption that the 130,000 µg/L result in 2012 was anomalous. In the core area Tps-Tnsc$_2$ HSU, the first semester 2013 maximum cis-1,2-DCE concentration was 4,300 µg/L (monitor well W-834-U1, February) in a sample collected toward the end of the treatment facility freeze protection shutdown period. The historic maximum cis-1,2-DCE concentration in the core area Tps-Tnsc$_2$ HSU was also from W-834-U1 at 11,000 µg/L (2009). Except for the previously mentioned anomalous detection, this well has shown a decreasing VOC concentration trend since 2000. The historic maximum chloroform concentration is 42 µg/L (W-834-A1 and W-834-U1, 2000). During the first semester 2013, chloroform was not detected in any core area Tps-Tnsc$_2$ HSU wells.

During the first semester 2013, vinyl chloride was detected in the core and the T2 distal areas in: (1) core area Tpsg HSU wells W-834-D3 (39 µg/L) and W-834-D5 (8 µg/L) and (2) T2 distal area Tpsg HSU well W-834-T2 (380 µg/L). In the core area, cis-1,2-DCE and vinyl chloride are degradation products of intrinsic anaerobic biodegradation of TCE. For example, after core area well W-834-D3 was converted from a dual extraction to a monitor well in 2002, vinyl chloride has been consistently detected in this well at concentrations ranging from 37 to 520 µg/L (historic maximum detected in 2003), including a first semester 2013 maximum of 39 µg/L. The likely electron donor for this degradation is TBOS/TKEBS. Very low ethene concentrations (0.66 µg/L, W-834-D3) were detected in 2012.

During the first semester 2013, TCE soil vapor concentrations from the core area SVE wells ranged from 0.12 to 4.1 $ppm_{v/v}$. The highest detection (4.1 $ppm_{v/v}$) is not representative of rebound conditions as it was collected from extraction well W-834-B2 on May 6, approximately 3 months after the treatment facility was restarted following the freeze protection shutdown period. These TCE vapor concentrations have decreased by three orders-of-magnitude from the maximum pre-remediation core area concentration of 3,200 $ppm_{v/v}$ (extraction well W-834-D4, 1989). Well W-834-D4 is located approximately 10 feet from well W-834-D5, where the historic maximum ground water VOC concentration in the Tpsg HSU was detected.

Leachfield Area

VOC concentrations and distribution in ground water and soil vapor in the Tpsg and Tps-$Tnsc_2$ HSUs in the Building 834 leachfield area are discussed below.

In the leachfield area, six wells (three monitor and three dual extraction) are screened in the Tpsg HSU. Total VOCs in this HSU have decreased from a pre-remediation maximum of 179,200 µg/L (mostly TCE, extraction well W-834-S1, 1988) to a first semester 2013 concentration of 4,300 µg/L (mostly TCE, March) in the same well. The first semester 2013 maximum total VOC concentration for all leachfield area Tpsg HSU wells was 14,000 µg/L (entirely TCE) detected in monitor well W-834-2113 (February). This well is located between leachfield area extraction wells W-834-S1 and W-834-S13. The historic maximum total VOC concentration in well W-834-2113 was 49,000 µg/L (entirely TCE, 2008). The historic maximum PCE detection was 6,300 µg/L (W-834-S1, 1986) and the first semester 2013 maximum PCE detection was 65 µg/L (March) in the same well. The historic maximum cis-1,2-DCE detection was 3,900 µg/L (2003) in extraction well W-834-S13. During the first semester 2013, cis-1,2-DCE had declined to 5.8 µg/L (March) in this well. During the first semester 2013, the maximum cis-1,2-DCE detection was 240 µg/L (W-834-S1, March). The historic maximum chloroform detection was 950 µg/L (W-834-S1, 1989); during the first semester 2013, chloroform was not observed above the reporting limit in any leachfield area Tpsg HSU wells.

During the first semester 2013, TCE soil vapor concentrations from the Tpsg HSU in the leachfield area ranged from 0.48 to 6.1 $ppm_{v/v}$, significantly lower than the 710 $ppm_{v/v}$ maximum pre-remediation concentration measured in 2004. The highest detection (6.1 $ppm_{v/v}$) is not representative of rebound conditions as it was collected from extraction well W-834-S12A on May 6, approximately 3 months after the treatment facility was restarted following the freeze protection shutdown period. These TCE vapor concentrations have decreased by two orders-of-magnitude from the maximum leachfield area concentration of 710 $ppm_{v/v}$ (extraction well W-834-S13, 2004). In the leachfield area, the underlying Tps-$Tnsc_2$ HSU (monitored by two wells, W-834-S8 and-S9), exhibits VOCs concentrations significantly lower than in the

overlying Tpsg HSU or in the core area. In leachfield area Tps-$Tnsc_2$ HSU ground water, the historic maximum total VOC concentration was 16,000 µg/L (entirely TCE, well W-834-S8, 1992). The first semester 2013 maximum total VOC concentration was 3,100 µg/L (mostly TCE, same well, February) showing a significant decreasing trend. PCE has declined from a historic maximum of 170 µg/L (W-834-S8, 1993) to a first semester 2013 maximum of 30 µg/L (same well, February). Cis-1,2-DCE has decreased from a historic maximum of 270 µg/L (W-834-S8, 1993) to a first semester 2013 maximum of 30 µg/L (same well, February). The compound 1,1,1-TCA has declined from a historic maximum of 170 µg/L (W-834-S8, 1993) to levels below the reporting limit during the first semester 2013. Chloroform has decreased from a historic maximum of 6.1 µg/L (W-834-S8, 1993) to levels below the reporting limit during the first semester 2013. The Tps-$Tnsc_2$ HSU, in the leachfield area, has exhibited declining VOC trends since monitoring began in 1989.

Distal Area

The distal area contains 20 monitor wells completed in the Tpsg HSU, one Tps-$Tnsc_2$ HSU monitor well and one $Tnbs_1$ HSU extraction well. VOC concentrations and distribution in ground water in the Tpsg, Tps-$Tnsc_2$, and $Tnbs_1$ HSUs in the Building 834 distal area are discussed below.

VOC concentrations have decreased from a historic maximum of 86,000 µg/L (entirely TCE) in well W-834-T2A (1988) to a first semester 2013 TCE maximum of 6,900 µg/L in the same well (January). PCE in the Tpsg HSU has decreased from a historic maximum of 160 µg/L in well W-834-S6 (1987) to a first semester 2013 maximum of 8.4 µg/L, W-834-1833 (January). Cis-1,2-DCE has decreased from a historic maximum concentration of 6,200 µg/L in W-834-T2 (2008) to a first semester 2013 maximum of 1,000 µg/L in the same well (January). 1,1,1-TCA has decreased from a historic maximum of 200 µg/L in well W-834-T2D (1991) to below the reporting limit in all wells during the first semester 2013. Chloroform has never been detected in distal area Tpsg HSU wells.

During the first semester 2013, chloroform has decreased from a historic maximum concentration of 950 µg/L (extraction well W-834-S1, 1989) to below the reporting limit in the same well. During the first semester 2013, chloroform was detected in only one well above the reporting limit (0.85 µg/L, monitor well W-834-M1, February), far below its MCL cleanup standard of 80 µg/L.

The underlying Tps-$Tnsc_2$ HSU is monitored by well W-834-2119, which contained a first semester 2013 maximum total VOC concentration of 13,000 µg/L (all TCE, February). Since monitoring began in 2005, VOC concentrations in this well have been relatively stable ranging from 6,300 µg/L (2005) to 16,700 µg/L (2012).In the distal area, the deeper $Tnbs_1$ HSU is monitored by well W-834-T1. VOCs have not been detected since 1986 and 1987 when very low concentrations (<4 µg/L) were detected.

2.2.3.2.2. TBOS/TKEBS Concentrations and Distribution

TBOS/TKEBS concentrations in ground water have decreased from a historic maximum of 7,300,000 µg/L (core area Tpsg HSU monitor well W-834-D3, 1995) to a first semester 2013 maximum of 13,000 µg/L (same well, February). This compound is found exclusively in the core area. TBOS/TKEBS concentrations differ from one sampling event to the next, probably because of varying amounts of free-phase TBOS/TKEBS in the subsurface. Historically,

floating product has been observed intermittently in some core area wells; however, no floating product was observed during the first semester 2013. Because TBOS/TKEBS concentrations in Tpsg HSU wells in the leachfield and distal areas have historically been below reporting limits, sampling for TBOS/TKEBS in the leachfield and distal areas are performed biennially, with approximately half the wells sampled during even numbered years and half sampled during odd numbered years. In the leachfield and distal area wells sampled during the first semester 2013, TBOS/TKEBS concentrations were below reporting limits.

The concentration and extent of TBOS/TKEBS in ground water are greater in the Tpsg HSU than in the underlying Tps-Tnsc$_2$ HSU. The historic maximum TBOS/TKEBS detection in this HSU is 110 µg/L (W-834-D10, 2009); during the first semester 2013, TBOS/TKEBS was not detected in the Tps-Tnsc$_2$ HSU and remains below the reporting limit in guard wells W-834-T1 and W-834-T3.

2.2.3.2.3. Nitrate Concentrations and Distribution

During the first semester 2013, nitrate concentrations in ground water exceeded the 45 mg/L MCL cleanup standard in the Building 834 core, leachfield and distal areas in the Tpsg HSU. In the Tps-Tnsc$_2$ HSU, nitrate concentrations in ground water exceeded the 45 mg/L MCL cleanup standard in the distal area only. During the first semester 2013, nitrate in Tpsg HSU ground water ranged from a maximum concentration of 320 mg/L (monitor well W-834-M1, February) to below the 0.5 mg/L reporting limit. In the core area, nitrate concentrations in the Tpsg HSU varied spatially and temporally due to denitrification associated with the ongoing intrinsic *in situ* biodegradation of TCE. The introduction of oxygen into the subsurface during SVTS operation subdued intrinsic biodegradation in some portions of the core area (denitrification occurs under oxygen-depleted not oxygenated conditions). During the first semester 2013, nitrate in the underlying Tps-Tnsc$_2$ HSU was detected in only two monitor wells; W-834-2119 in the distal area at 84 mg/L and W-834-T5 located south of the distal area at 87 mg/L; all other Tps-Tnsc$_2$ HSU wells were below the 0.5 mg/L reporting limit.

Although nitrate concentrations in ground water have decreased from a historic maximum of 749 mg/L (monitor well W-834-K1A, 2000), the continued presence of elevated nitrate indicates that an ongoing source of nitrate to ground water exists, probably due to a combination of both natural and anthropogenic sources. Nitrate was not detected in guard wells W-834-T1 and W-834-T3 during the first semester 2013.

2.2.3.2.4. Other Contaminant Concentrations and Distribution

The extent of diesel in ground water in the Building 834 area is limited to the vicinity of a former underground storage tank located beneath the paved portion of the core area. During the first semester 2013, diesel concentrations were measured in ground water from W-834-U1 at 650 µg/L (February) and W-834-2001 at 1,100 µg/L (March). It is noteworthy that the previous sample collected from W-834-2001 had 4,800 µg/L of diesel (September 2012); the historic maximum diesel concentration was 3,900,000 µg/L in the same well (2004). Diesel concentrations measured in ground water vary from one sampling event to the next, likely due to varying amounts of free-phase product in the subsurface. No floating product was detected in ground water during the first semester 2013.

During the first semester 2013, perchlorate was detected in ground water from monitor well W-834-2118 at a maximum concentration of 5.5 µg/L (February). This concentration was

slightly above the 4 µg/L reporting limit but below the 6 µg/L MCL cleanup standard. Perchlorate concentrations in well W-834-2118 have decreased from a historic maximum of 11 µg/L in 2005. During the first semester 2013, attempts to sample ground water for perchlorate from monitor wells W-834-S7 and W-834-A2 were unsuccessful due to insufficient water or dry conditions. Ground water from well W-834-S7 has had historic perchlorate concentrations ranging from 8.8 to 11 µg/L; ground water from well W-834-A2 has not been analyzed for perchlorate, due to insufficient water or dry conditions. Semi-annual ground water monitoring for perchlorate will continue for monitor wells W-834-2118, W-834-S7 and W-834-A2.

2.2.3.3. Building 834 OU Remediation Optimization Evaluation

During the first semester 2013, no modifications were made to the core or leachfield area extraction wellfields. Substantially more VOC mass is being removed by soil vapor extraction than by ground water extraction. Of the 3 kg of VOCs removed during the first semester 2013, 2.7 kg was removed in the vapor phase.

TCE biodegradation continues within the core area where significant amounts of TBOS/TKEBS are present to serve as an electron donor for intrinsic biodegradation. Historically, the primary byproduct of this biodegradation has been cis-1,2-DCE, although vinyl chloride and trace detections of ethene have also been detected in some wells, especially in well W-834-D3. During the first semester 2013, the treatment system was restarted on February 12, after having been off since mid-December 2012 to protect against damage caused by freezing temperatures. Core area monitor wells W-834-C4, W-834-C5, W-834-D3, W-834-D14, W-834-J2, and W-834-1709 were sampled between February 7 and February 13 (close to the date of treatment system re-start) in order to provide data regarding the accumulation of total VOCs, TCE, cis-1,2-DCE, and vinyl chloride during the shutdown period as indicators of *in situ* biodegradation. Typically, increases in VOCs are expected during treatment facility shutdown period when subsurface conditions become anaerobic. However, no significant increases were observed during the most recent shutdown period. In fact, several notable decreases in total VOCs, TCE and cis-1,2-DCE were observed including: (1) reduction of TCE by ½ and cis-1,2-DCE by 2/3 in W-834-C5, (2) reduction of TCE by ¼ and of cis-1,2-DCE by 4/5 in W-834-D14, and (3) reduction of TCE by 2/3 and cis-1,2-DCE by 4/5 in W-834-1709. Wells W-834-C5, W-834-D3, and W-834-1709 have historically yielded the highest concentrations of cis-1,2-DCE. During the annual winter shutdown periods that occurred since 2008, overall concentrations have generally declined in wells W-834-C4 and W-834-C5 while rising in well W-834-D3 and remaining essentially flat in W-834-D14, W-834-J2 and W-834-1709.

The Tpsg HSU extraction wellfield within the core area continues to adequately capture the highest VOC concentrations in ground water. Per the recommendations presented in the third Five-Year Review Report for the Building 834 Operable Unit (Valett et al., 2012), VOC concentrations in monitor well W-834-C5 and nearby well W-834-B4 will continue to be observed closely during the next five years. If these wells exhibit stable or increasing VOC trends, installation of extraction wells in the vicinity of these wells may be considered.

In the leachfield area, the extraction wellfield continues to capture some portions of the VOC plume in ground water. However, the areas with the highest concentrations (in the vicinity of monitor well W-834-2113) are not fully captured. Per the recommendations presented in the Building 834 Five Year Review, VOC concentrations in well W-834-2113 will also be

monitored closely during the next five years. If this well exhibits an increasing VOC trend, additional measures, including conversion of this well to an extraction well, installation of an extraction well in the vicinity of well W-834-2113, and/or implementing *in situ* bioremediation in this area, may be considered.

As described in Section 2.2.3.4 below, enhanced *in situ* bioremediation is being evaluated as a long-term treatability study in the T2 distal area. Overall, VOC concentrations in the area impacted by the bioremediation study have decreased significantly due to a combination of *in situ* biostimulation, bioaugmentation and dilution. A bioremediation recirculation cell in this area is planned for fiscal year 2014.

VOC concentration trends in the underlying Tps-$Tnsc_2$ HSU will also continue to be monitored closely during the next five years. Per the recommendations presented in the Building 834 Five Year Review, if wells W-834-A1 and W-834-2119 exhibit increasing VOC trends, installation of additional extraction wells in this area may be considered.

VOCs in ground water are expected to continue to decrease as remediation progresses. The deep regional $Tnbs_1$ aquifer continues to be free of contaminants as demonstrated by quarterly analyses of ground water from guard wells W-834-T1 and W-834-T3, both screened in the lower $Tnbs_1$ HSU.

2.2.3.4. T2 Treatability Study

Since 2005, the Tpsg HSU in the distal area has been the target of a long-term enhanced *in situ* bioremediation treatability study, including biostimulation using sodium lactate and bioaugmentation using KB-1, a consortium of dechlorinating bacteria that contain Dehalococcoides. This treatability study continued during the first semester 2013 in the form of post-biostimulation rebound monitoring. The primary objective of this pilot-scale treatability study was to assess the performance of enhanced *in situ* bioremediation of TCE at concentrations greater than 10,000 µg/L in a water-bearing zone typical of contaminant source areas at Site 300. Since 2005, progress of this test has been reported semi-annually in the CMRs. A detailed description of the test results, including procedures, performance assessment, conclusions and recommendations were recently submitted as Appendix A of the Building 834 Five Year Review (Valett et al., 2012).

During the first semester 2013, TCE concentrations were lowest in: (1) W-834-1825 (original bio-augmentation well) at 9.2 µg/L (January), (2) W-834-1824 (injection well) at 68 µg/L (January), and (3) W-834-T2 (first downgradient performance well) at 35 µg/L (January), as compared to the remaining T2 area Tpsg HSU wells that ranged from 4,100 µg/L (W-834-1833, January) to 6,900 µg/L (W-834-T2A, January). Concentrations of cis-1,2-DCE were highest in well W-834-T2 at 1,000 µg/L, with the remaining T2 area Tpsg HSU wells ranging from <0.5 (W-834-T1, February and June) to 44 µg/L (W-834-1833, January). Vinyl chloride was also highest in W-834-T2 at 380 µg/L (January), with remaining T2 area Tpsg HSU wells ranging from <0.5 µg/L (W-834-T1, February and June) to 23 µg/L (W-834-1824). Ethene concentrations were highest in W-834-T2 at 360 µg/L (January) and W-834-1825 at 100 µg/L (January), with remaining T2 area Tpsg HSU wells ranging from 0.15 µg/L (W-834-T2D, January) to 3.1 µg/L (W-834-1824, January). The cumulative data presented above indicates that enhanced *in situ* bioremediation of TCE continues in the T2 area, particularly in the vicinity of wells W-834-T2, W-834-1824 and W-834-1825. Initially, VOCs rebounded in the treatment zone for several months following the end of treatment but now they exhibit a decreasing trend.

VOCs outside the treatment zone exhibit a decreasing trend also due to the significant reduction in VOCs due to enhanced *in situ* biodegradation within the treatment zone.

2.2.3.5. Building 834 OU Remedy Performance Issues

During the reporting period, there were no new issues that affect the performance of the cleanup remedy for the Building 834 OU. Although the remedy continues to be protective of human health and the environment, and effective in cleaning up the Tpsg HSU, it has not significantly decreased VOC concentrations in the underlying Tps-$Tnsc_2$ HSU beneath the core area. Per the recommendations presented in the Building 834 Five Year Review, VOC trends are being monitored in Tps-$Tnsc_2$ HSU wells and installation of additional extraction wells in this HSU may be considered.

2.3. Pit 6 Landfill (Pit 6) OU 3

The Pit 6 Landfill covers an area of 2.6 acres near the southern boundary of Site 300. This landfill was used from 1964 to 1973 to bury waste in nine unlined debris trenches and animal pits. The buried waste, which includes shop and laboratory equipment and biomedical waste is located on or adjacent to the Corral Hollow-Carnegie Fault. Farther east, the fault trends to the south of two nearby water-supply wells CARNRW1 and CARNRW2. These active water-supply wells are located about 1,000 feet east of the Pit 6 Landfill. They provide water for the nearby Carnegie State Vehicular Recreation Area and are monitored on a monthly basis.

The Pit 6 Landfill was capped and closed in 1997 under CERCLA to prevent further leaching of contaminants resulting from percolation of rainwater through the buried waste. The engineered, multi-layer cap is intended to prevent rainwater infiltration into the landfill, mitigate potential damage by burrowing animals and vegetation, prevent potential hazards from the collapse of void spaces in the buried waste, and prevent the potential flux of VOC vapors through the soil. Surface water flow onto the landfill is minimized by a diversion channel on the north side and drainage channels on the east, west, and south sides of the engineered cap. A map of Pit 6 Landfill OU showing the locations of monitor and water-supply wells is presented on Figure 2.3-1.

2.3.1. Pit 6 Landfill OU Surface Water and Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.3-1. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring and post-closure requirements with the following exceptions; forty-six required analyses in seven wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples and eight required analyses were not performed due to an inoperable pump. The pumps in wells K6-04 and K6-25 were not operable during first quarter. The pump in well K6-04 was removed in August 2013 and the well will be sampled without a pump in the future. The pump replacement for wells K6-25 is being scheduled.

2.3.2. Pit 6 Landfill OU Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.3.2.1. Pit 6 Landfill OU Contaminant Distribution and Concentration

At the Pit 6 Landfill OU, VOCs and tritium are the primary COCs detected in ground water. Perchlorate and nitrate are secondary COCs. These constituents have historically been identified within the Qt-$Tnbs_1$ HSU. The concentrations of COCs have significantly declined below historic maximum levels in Pit 6 ground water.

As part of the recent Five-Year Review for OUs 3 (Pit 6 Landfill) and 8 (Buscheck et al., 2012) the Qt-$Tnbs_1$ HSU was formally divided into the Qt-$Tnbs_1$ North HSU (portion north of the Corral Hollow-Carnegie Fault Zone) and the Qt-$Tnbs_1$ South HSU (portion within the Corral Hollow-Carnegie Fault Zone). A deeper water-bearing zone ($Tnbs_1$ Deep HSU) occurs beneath a low permeability confining layer at an approximate depth of 170 feet within the $Tnbs_1$ stratigraphic unit in the northern fault block. Based on evaluations of historical water elevation hydrographs, monitor wells EP6-07, K6-27, K6-34 and K6-35, which were previously designated as $Tnbs_1$ Deep HSU wells, are now designated as Qt-$Tnbs_1$ North HSU wells. The main criterion for reinterpreting the Qt-$Tnbs_1$ North HSU designation for these wells is that their long-term hydrographs exhibit a common hydraulic response to pumping from the nearby CARNRW water-supply wells.

2.3.2.1.1. VOC Concentrations and Distribution

The VOC COCs in Pit 6 Landfill ground water include chloroform, 1,2-DCA, cis-1,2-DCE, trans-1,2-DCE, PCE, 1,1,1-TCA, and TCE. Of these VOCs, only TCE and cis-1,2-DCE were detected in Pit 6 Landfill ground water monitor wells at concentrations above the 0.5 µg/L reporting limit during the first semester 2013. Only TCE was detected at a concentration above its 5 µg/L MCL cleanup standard in one well (5.8 µg/L in EP6-09, January 2013). PCE and 1,1,1-TCE have never been detected at concentrations above their MCL cleanup standards and are currently below reporting limits in all Pit 6 wells. Concentrations of trans-1,2-DCE and 1,2-DCA are below reporting limits in all Pit 6 wells. Cis-1,2-DCE concentrations are below the reporting limit in 29 of the 30 wells currently monitored, and are and have been below its cleanup standard since 1993 in the one well in which it is currently detected.

In the Qt-$Tnbs_1$ North HSU, TCE concentrations have decreased from a historic maximum of 1.4 µg/L (monitor well K6-36, 2001) to below the 0.5 µg/L reporting limit in the first semester 2013. No other VOCs were detected in the Qt-$Tnbs_1$ North HSU during the first semester 2013. Due to insufficient water, ground water samples have not been collected from monitor wells EP6-08 (since April 2008) and K6-24 (since January 2011). To resolve this problem, two new monitor wells were drilled in the Qt $Tnbs_1$ HSU with screens at greater depths in saturated $Tnbs_1$, north of the fault, in the vicinity of EP6-08 and K6-24. As shown on Figure 2.3-1, well W-PIT6-2816 is located 30 feet east-southeast of well EP6-08 and W-PIT6-2817 is located 50 feet east-southeast of well K6-24. Sampled semi-annually (first and third quarters beginning in 2013), VOCs have not been detected above the reporting limit in these wells since installation and during the first semester 2013.

In the Qt-$Tnbs_1$ South HSU, TCE concentrations have decreased from a historic maximum of 250 µg/L (monitor well K6-19, 1988) to 2.9 µg/L (January 2013, K6-19) and a first semester

2013 maximum concentration of 5.8 µg/L (monitor well EP6-09, January); the previous (second semester 2012) TCE concentration in EP6-09 was 5.9 µg/L. For two months in late 1998, ground water was extracted from well EP6-09 to determine the effect on TCE trends. During the period of pumping, TCE concentrations decreased from 14 to 1.4 µg/L. Since 1998, TCE concentrations in well EP6-09 rebounded to 10 µg/L in 2008, but have since gradually decreased 5.8 µg/L in the first semester 2013. In the first semester 2013, TCE was detected in four wells in the Qt-$Tnbs_1$ South HSU (monitor wells EP6-09, K6-16, K6-18 and K6-19) at concentrations above the reporting limit, barely exceeding the 5 µg/L MCL cleanup standard in only one well, EP6-09 (5.8 µg/L). During the first semester 2013, one Qt-$Tnbs_1$ South HSU well had detectable cis-1,2-DCE at 2.4 µg/L (monitor well K6-01S, January); below the 6 µg/L MCL cleanup standard. The presence of cis-1,2-DCE, a degradation product of TCE, suggests that some natural dechlorination may be occurring.

TCE was not detected in the $Tnbs_1$ Deep HSU during the first semester 2013. During the first semester 2013, VOCs were not detected in guard wells W-PIT6-1819, K6-17, K6-22 and K6-34 nor from the two active CARNRW water-supply wells and two inactive CARNRW water-supply wells.

2.3.2.1.2. Tritium Concentrations and Distribution

Tritium was detected above the 100 picoCuries per liter (pCi/L) reporting limit in samples from four wells completed in both the Qt-$Tnbs_1$ North and Qt-$Tnbs_1$ South HSUs. Tritium has never been detected in Pit 6 Landfill ground water at activities exceeding the 20,000 pCi/L MCL cleanup standard.

In the Qt-$Tnbs_1$ North HSU, tritium activities have decreased from a historic maximum of 2,150 pCi/L (monitor well K6-36, 2000) to a first semester 2013 maximum of 209 pCi/L (well W-PIT6-2817, January). Well K6-36 has not been sampled since 2006 due to insufficient water. However, tritium has been not detected above the 100 pCi/L reporting limit in well K6-35, which is located adjacent to K6-36 with a deeper screened interval, since 2009.

In the Qt-$Tnbs_1$ South HSU, tritium activities have decreased from a historic maximum of 3,420 pCi/L (monitor well BC6-13, 2000) to a first semester 2013 maximum of 271 pCi/L (monitor well K6-19, January). Well BC6-13, which is screened from 0 to 5 feet below ground surface and was used to monitor for contaminants Spring 7, has been dry since 2000. The historic maximum tritium activity in well K6-19 is 2,520 pCi/L (1999).

Tritium was not detected in the $Tnbs_1$ Deep HSU during the first semester 2013. The historic maximum tritium activity in this HSU is 1,680 pCi/L (monitor well K6-26, 1999), well below its 20,000 pCi/L MCL cleanup standard.

During the first semester 2013, tritium activities were detected twice in guard well W-PIT6-1819 at 123 pCi/L (January) and 122 pCi/L (April). Prior to 2013, tritium activities in well W-PIT6-1819 ranged from <100 pCi/L to 295 pCi/L (2007). This well is used to define the downgradient extent of tritium in ground water with activities above the 100 pCi/L background level. It is located approximately 100 feet west of the Site 300 boundary within the Carnegie SVRA residence area and about 200 feet west of the CARNRW1 and CARNRW2 water-supply wells. During the first semester 2013, tritium was not detected (1) in guard wells K6-34, K6-22 or K6-17 nor (2) at activities above the 100 pCi/L reporting limit in any of the monthly ground water samples from the four CARNRW offsite wells.

2.3.2.1.3. Perchlorate Concentrations and Distribution

During the first semester 2013, perchlorate was not detected at or above the 4 µg/L reporting limit in any Qt-$Tnbs_1$ North, Qt-$Tnbs_1$ South, or $Tnbs_1$ Deep HSU ground water samples, including samples collected from guard wells and the CARNRW water-supply wells. Perchlorate concentrations in ground water have steadily decreased from a historic maximum of 65.2 µg/L (monitor well K6-19, 1998) to below the 4 µg/L reporting limit in all wells since 2009. DOE/NNSA collected samples for perchlorate analysis from two wells W-PIT6-2816 and W-PIT6-2817 recently installed in 2012 in areas where other wells screened in the Qt-$Tnsb_1$ North HSU had gone dry. Perchlorate was not detected in ground water samples from wells W-PIT6-2816 and W-PIT6-2817.

2.3.2.1.4. Nitrate Concentrations and Distribution

During the first semester 2013, nitrate was detected in samples collected from wells completed within the Qt-$Tnbs_1$ North and South HSUs.

In the Qt-$Tnbs_1$ North HSU, nitrate was detected in two wells during the first semester 2013. Guard well W-PIT6-1819 contained 2.1 mg/L (January) and monitor well W-PIT6-2817 contained 0.62 mg/L of nitrate. Nitrate concentrations in these two Qt-$Tnbs_1$ North HSU wells were well below its 45 mg/L MCL cleanup standard and within the range of background. Nitrate was not detected in ground water samples from any wells completed in the Qt-$Tnbs_1$ North HSU at concentrations above the MCL cleanup standard or outside the range of nitrate background levels.

In the Qt-$Tnbs_1$ South HSU, nitrate was detected in ground water above the 45 mg/L MCL cleanup standard in one well, monitor well K6-23 at a concentration of 150 mg/L. In 2012, nitrate was measured in this well at 150 and 170 mg/L in January and July, respectively. The historic maximum nitrate concentration detected in well K6-23 is 240 mg/L (2000). This well consistently yields ground water nitrate concentrations in excess of the MCL cleanup standard and is coincidentally located in close proximity to the Building 899 septic system, which may be a potential source of the nitrate at this location.

During the first semester 2013, nitrate was not detected in the $Tnbs_1$ Deep HSU above the <0.5 reporting limit and historically, has only been detected three times at concentrations no greater than 5 mg/L.

During the first semester 2013, nitrate was detected in guard well W-PIT6-1819 at 2.1 mg/L (January) but was not detected in (1) guard wells K6-34, K6-22 or K6-17, (2) water-supply well CARNRW1 or (3) inactive water-supply well CARNRW3 above the reporting limit. During the first semester 2013, nitrate was detected in water-supply well CARNRW2 at 2.6 mg/L (March) and inactive water-supply well CARNRW4 at 11 mg/L (February).

2.3.2.2. Pit 6 Landfill OU Remediation Optimization Evaluation

The remedy for tritium and VOCs in ground water at the Pit 6 Landfill is Monitored Natural Attenuation (MNA). Ground water levels and contaminants are monitored on a regular basis to: (1) evaluate the efficacy of the natural attenuation remedy in reducing contaminant concentrations, and (2) detect any new chemical releases from the landfill. In general, the primary ground water COCs (VOCs and tritium) at the Pit 6 Landfill OU continue to decline and ground water levels beneath the landfill remain well below the buried waste. Ground water

elevations have decreased beneath two key monitor wells located north of the fault (wells EP6-08 and K6-24). Two new wells (W-PIT6-2816 and W-PIT6-2817) were installed in the vicinity of these wells in 2012 with screens deeper in the Qt-$Tnbs_1$ HSU. Routine samples (semi-annually for primary COCs and annually for secondary COCs) are now scheduled from these new wells beginning in 2013.

In general, VOCs in ground water near Pit 6 continue to exhibit decreasing trends and the VOC plume extent is generally stable to decreasing. Concentrations of the VOC COCs 1,2-DCA, trans-1,2-DCE, PCE, and 1,1,1-TCA are all below reporting limits in all Pit 6 wells. Concentrations of cis-1,2-DCE have been below its 6 µg/L cleanup standard since 1993; and it is currently detected above the 0.5 µg/L reporting limit in one well (K6-01S) at a concentration of 2.4 µg/L (January). TCE concentrations in ground water remain below the 5 µg/L MCL cleanup standard in samples from all Pit 6 Landfill OU wells except for one well where it was detected slightly above the 5 µg/L cleanup standard (5.8 µg/L, EP6-09). As recommended in the recent Five-Year Review for OUs 3 and 8 (Buscheck et al, 2012), TCE concentrations will be monitored in ground water from well EP6-09 over the next five years and if concentrations increase or remain above 5 µg/L, remedial measures such as pump-and-treat or enhanced *in situ* bioremediation will be considered for this well.

Tritium activities in ground water continue to decrease toward background levels and remain far below the 20,000 pCi/L MCL cleanup standard. During the first semester 2013, the maximum tritium activity detected in Pit 6 wells was 271 pCi/L (K6-19, January). These low activities show that the MNA remedy for tritium in ground water at the Pit 6 Landfill OU 3 continues to be effective.

Perchlorate concentrations in Pit 6 area ground water have decreased from a maximum of 65.2 µg/L (well K6-19, 1998) to below its reporting limit (4 µg/L) in all Pit 6 Landfill OU wells. . Perchlorate concentrations have remained below its reporting limit (and 6 µg/L MCL cleanup standard) in all Pit 6 wells since March 2009.

Nitrate continues to be consistently detected in a single Pit 6 well (K6-23) above its 45 mg/L MCL cleanup standard. During the first semester 2013, nitrate detections in this well were 150 mg/L (January). Well K6-23 is located in close proximity to the Building 899 septic system, which is a potential source of the nitrate at this location.

2.3.2.3. Pit 6 Landfill OU Performance Issues

Historically, low ground water levels north of the Corral Hollow-Carnegie Fault have limited the ability to monitor the Pit 6 Landfill OU. In 2012, two new wells (W-PIT6-2816 and W-PIT6-2817) were drilled to saturated Qt-$Tnbs_1$ HSU north of the fault at greater depths than existing nearby monitor wells. Initial ground water sample results in 2012 and the first semester of 2013 are generally consistent with historical results from shallower wells in the same vicinity. These two new wells have been added to the Pit 6 Landfill OU sampling and analysis plan and sampled semi-annually for primary COCs and annually for secondary COCs starting in 2013. Currently, there is very little contamination above ground water cleanup standards at the Pit 6 Landfill OU.

During the first semester 2013, all scheduled samples were collected from guard well W-PIT6-1819 and water-supply wells CARNRW1 and CARNRW2. Based on these results, the

remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.4. High Explosives Process Area (HEPA) OU 4

The HEPA has been used since the 1950s for the chemical formulation, mechanical pressing, and machining of high explosives (HE) compounds into shaped detonation charges. Surface spills from 1958 to 1986 resulted in the release of contaminants at the former Building 815 steam plant. Subsurface contamination is also attributed to HE waste water discharges into former unlined rinse water lagoons. Another minor source of contamination in ground water resulted from leaking contaminated waste stored at the former Building 829 Waste Accumulation Area (WAA) located near Building 829.

Six GWTSs operate in the HEPA: Building 815-Source (815-SRC), Building 815-Proximal (815-PRX), Building 815-Distal Site Boundary (815-DSB), Building 817-Source (817-SRC), Building 817-Proximal (817-PRX), and Building 829-Source (829-SRC). A map of the HEPA OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.4-1.

The 815-SRC GWTS began operation in September 2000 removing VOCs (primarily TCE), HE compounds (RDX and High Melting Explosive [HMX]), and perchlorate from ground water. Initially, the system extracted from one extraction well, W-815-02 and consisted of aqueous-phase GAC, an ion-exchange system, and an anaerobic bioreactor for nitrate destruction. The treated effluent was discharged to a misting system. The anaerobic bioreactor was decommissioned in 2003. In 2005, the wellfield was expanded to include extraction well W-815-04, with a current combined flow rate of approximately 1.2 gpm. The current GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for VOC and HE compound removal. In 2005, the discharge method of misting was replaced by injection of the treated effluent into well W-815-1918 for *in situ* denitrification in the $Tnbs_2$ HSU. In December 2012, W-815-2803 was added to the extraction wellfield and connected to the 815-SRC treatment facility. This extraction well has a flow rate of <0.5 gpm.

The 815-PRX GWTS began operation in October 2002 removing TCE and perchlorate from ground water. Ground water is extracted from wells W-818-08 and W-818-09 at a current combined flow rate of approximately 2.25 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for TCE removal. In 2005, the discharge method of misting was replaced by injection of the treated effluent into well W-815-2134 where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 815-DSB GWTS began operation in September 1999 removing low concentrations (less than 10 μg/L) of TCE from ground water extracted near the Site 300 boundary. Ground water was extracted from wells W-35C-04 and W-6ER at a combined flow rate of approximately 3 to 4 gpm. In 2011-2012, the 815-DSB extraction wellfield was expanded to include a new extraction well W-815-2608. The GWTS originally operated intermittently on solar-power until site power was installed in 2005 when 24-hour operations began. The current GWTS configuration includes a Cuno filter to remove particulates and three aqueous-phase GAC

canisters connected in series for TCE removal. The treated effluent is discharged to an infiltration trench.

The 817-SRC GWTS began operation in September 2003 removing HE compounds (RDX and HMX) and perchlorate from ground water. Well W-817-01 extracts ground water from a very low yield portion of the $Tnbs_2$ aquifer. It pumps ground water intermittently using solar power at current flow rates ranging from 40 to 160 gallons per month. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for HE compound removal. Treated ground water is injected into upgradient injection well W-817-06A where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 817-PRX GWTS began operation in September 2005 removing VOCs, RDX, and perchlorate from ground water. Initially, ground water was extracted from wells W-817-03 and W-817-04 at a combined flow rate of approximately 1.0 gpm, although the vast majority of ground water was extracted from well W-817-03. In 2007, the extraction wellfield was expanded to include extraction well, W-817-2318. Due to the low yield from ground water extraction well W-817-04, extraction from this well was discontinued in December 2007. Ground water is currently extracted at a combined flow rate of approximately 2.0 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two aqueous-phase GAC canisters connected in series for TCE and RDX removal, and three ion-exchange resin columns (also connected in series) for perchlorate removal. A third aqueous-phase GAC canister completes the treatment chain, and is placed in this position to remove any residual organic compounds that may be emitted from new ion-exchange resin. Treated ground water containing nitrate is injected into upgradient injection wells W-817-2109 and W-817-02 that were added in 2007. The treated effluent is split between the two injection wells where an *in situ* denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 829-SRC GWTS began operation in August 2005 removing VOCs, nitrate, and perchlorate from ground water. The GWTS configuration included two ion-exchange columns containing ion-exchange resin connected in series for perchlorate removal, three aqueous phase GAC canisters (also connected in series) for VOC removal, and a biotreatment unit to treat nitrate. However, the biotreatment unit was not effectively removing nitrate. An Explanation of Significant Difference (ESD) (Ferry et al., 2010) was submitted to the regulatory agencies in 2010. The ESD documented the decision to use ion-exchange treatment media to remove nitrate from ground water, rather than the existing biotreatment unit. Modifications to 829-SRC were initiated in 2010 and were completed June 2011. Solar power continues to be used to extract ground water from well W-829-06 at a flow rate of approximately 1 to 10 gallons per day (gpd). The current configuration includes two ion-exchange resin columns connected in series for perchlorate and nitrate removal and three aqueous phase GAC canisters (also connected in series) for VOC removal. Treated effluent is injected into upgradient well W-829-08.

2.4.1. HEPA OU Ground Water Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.4.1.1. HEPA OU Facility Performance Assessment

The monthly ground water discharge volumes, extraction flow rates, and operational hours in the first semester of 2013 are summarized in Tables 2.4-1 through 2.4-6. The total volume of ground water extracted and treated and the total contaminant mass removed during the reporting period is presented in Table Summ-1. The total volume of ground water treated and discharged and the total contaminant mass removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester of 2013 are presented in Tables 2.4-7 through 2.4-9. The pH measurement results are presented in Appendix A.

2.4.1.2. HEPA OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 815-SRC, 815-PRX, 815-DSB, 817-SRC, 817-PRX, and 829-SRC GWTSs during the first semester 2013:

815-SRC GWTS

- Pumping from new extraction well W-815-2803 started on January 30.
- The GWTS shut down from March 2 to March 4 and March 21 due to a site-wide power outage.
- The GWTS was found offline on June 17 and was restarted.
- Extraction well W-815-04 was secured on June 19 to perform an interlock verification. On June 26, extraction from wells W-815-04 and W-815-2803 recommenced after system software was reloaded. On June 27, extraction well W-815-04 was secured for the remainder of the reporting period due to a fault condition.

815-PRX GWTS

- The GTWS was secured from December 17 until March 4 to protect against freeze damage.
- The GWTS shut down temporarily on March 25 due to a power outage in the area.
- The GWTS was offline from June 18 to June 19 while a broken coupler was repaired.

815-DSB GWTS

- The GWTS shut down from March 2 to March 4 due to a site-wide power outage.
- The GWTS shut down on March 30 and was restarted on April 2.

817-SRC GWTS

- The GWTS was secured from December 17 to February 20 to protect against freeze damage.

817-PRX GWTS

- The GWTS was secured from December 17 to January 22 and January 24 to January 28 to protect against freeze damage.
- The GWTS was secured on February 14 for transducer maintenance and was restarted on February 19 extracting from well W-817-03 only.

- The GWTS shut down from March 2 to March 4 due to a site-wide power outage.
- Extraction well W-817-2318 was restarted March 4.
- The GWTS was secured on May 6 to conduct maintenance on the level transducer in well W-817-2109.
- The GWTS was secured on May 8 due to a perchlorate detection of 5.6 µg/L in the effluent (see Section 2.4.1.3). A complete ion-exchange resin replacement was performed, and the system was restarted and sampled on May 28. The system was secured on May 30 when the sample results indicated perchlorate was present in the effluent at a concentration of 8 µg/L. On June 5, 750 gallons of water were flushed through the system, discharging to a collection tank, sampled, and secured until the analytical results were received. Perchlorate was not detected in the effluent, however it continued to be detected in the intermediate ports. After another 750 gallon flush, a second round of sampling was completed on June 12 and the system was secured. Trace perchlorate was detected in the system. The carbon canisters were cleaned and refilled with fresh carbon. The system was restarted the week of July 8, and the effluent sampled and discharged to the collection tank.

829-SRC GWTS

- The GWTS cleanout was initiated on April 19. All treatment media columns were cleaned and refilled on April 24. The system was restarted and sampled on May 20 and operated until May 22, discharging to a water collection tank. The system was restarted on May 28, again discharging to a water collection tank. The system was secured on June 6 to allow ground water to rebound over the weekend so samples could be collected on June 10. Samples were collected on June 10 and the system remained in operation, discharging to a water collection tank. The system was secured on June 17 while a path forward to address residue volatile organic compounds is evaluated.

2.4.1.3. HEPA OU Compliance Summary

The 815-SRC, 815-PRX, 815-DSB, and 817-SRC GWTSs operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge.

At 817-PRX, perchlorate was detected in the effluent sample collected on May 6, 2013 at a concentration of 5.6 µg/L. The system was shut down as soon as analytical results were received. An ion-exchange resin intermediate port sample was also collected, and perchlorate was detected at a concentration of 18 µg/L. A complete ion exchange resin change-out had been performed in July of 2012 due to the contaminated resin discussed previously. However, no perchlorate-specific resin was available at that time, so another ion-exchange resin that had demonstrated good perchlorate sorption had been used. For unknown reasons, complete breakthrough of the second ion-exchange column occurred within 3 months. This quick breakthrough period had not been previously observed. Both ion-exchange columns were changed out with new approved perchlorate-specific resin and the system was restarted on May 28, 2013. Perchlorate was again detected in the effluent sample at a concentration of 8.0 µg/L. This was presumably due to perchlorate contamination throughout the latter part of the treatment system, which includes the GAC. With the effluent being discharged to a collection

vessel, LLNL attempted to flush the residual perchlorate out of the system, but after 1,500 gallons the perchlorate was still detected throughout the latter part of the system. A complete cleanout of the system and installation of new GAC was then performed in June 2013. The system was then restarted in July and multiple samples were collected to demonstrate the effluent was within discharge limits. Because of the discharge of perchlorate in May, and not being able to rectify the situation until July 2013, this system was out of compliance during this reporting period.

829-SRC GWTS operated during the latter part of the reporting period, but with the effluent being discharged to a collection vessel. Results of samples collected during this period indicated that organic constituents from the ion-exchange resins were still leaching out of the resin beads and into the water within the columns. Since no water containing these organic constituents was discharged, this system remained within compliance during this reporting period.

2.4.1.4. HEPA OU Facility Sampling Plan Evaluation and Modifications

The HEPA OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.4-10. The only modifications made to the plan included the following:

1) Additional monitoring was conducted at the 817-PRX GWTS in May and June due to perchlorate issues, as discussed above.
2) A modified monitoring schedule was conducted at 829-SRC GWTS during this reporting period due to traces of VOC detected in the system as discussed above.

2.4.1.5. HEPA OU Treatment Facility and Extraction Wellfield Modifications

No modifications to the treatment facilities or extraction wellfields were made during this reporting period.

2.4.2. HEPA OU Ground Water and Surface Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.4-11. This table also explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; thirty-two required analyses in seven wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples, four required analyses were not performed due to unsafe conditions at monitor well W-815-05 (area around well has been eroded), and twelve required analysis were not performed due to inoperable pumps in four wells. The pumps in wells W-35C-06, W-6ES, W-806-06A, and W-827-03 were not operable during first quarter. The pumps in wells W-35C-06 and W-6ES were replaced in May and April 2013, respectively. The pump replacements for wells W-806-06A and W-827-03 are being scheduled.

2.4.3. HEPA OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

2.4.3.1. HEPA OU Mass Removal

The monthly ground water mass removal estimates for the first semester of 2013 are summarized in Tables 2.4-12 through 2.4-17. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.4.3.2. HEPA OU Contaminant Concentrations and Distribution

At the HEPA OU, VOCs (mainly TCE) are the primary COCs detected in ground water; RDX, HMX, 4-ADNT, perchlorate, and nitrate are secondary COCs. Most of the HEPA ground water contamination occurs in the $Tnbs_2$ HSU. Some COCs (TCE, RDX, HMX, perchlorate and nitrate) have also been detected in the perched ground water of the Tpsg-Tps HSU in the vicinity of Buildings 815 and 817. Minor concentrations of VOCs, perchlorate, and nitrate are also present in perched ground water located in the $Tnsc_{1b}$ HSU beneath the former Building 829 Waste Accumulation Area (WAA). The WAA is located in the northwest portion of HEPA. No contamination has been detected in the Upper and Lower $Tnbs_1$ HSUs in the HEPA OU. Figure 2.4-1 shows the location of new and existing wells in the HEPA OU.

2.4.3.2.1. VOC Concentrations and Distribution

VOC concentrations and distribution in ground water in the Tpsg-Tps and $Tnbs_2$ HSUs in the HE Process Area are discussed below.

Tpsg-Tps HSU

VOCs used in the calculation of total VOCs have been detected in the sands and gravels of the Tpsg-Tps HSU (mainly TCE, but also carbon tetrachloride, total-1,2-DCA, cis-1,2-DCE, chloroform and 1,1-DCE). Overall, these VOC concentrations have been stable or decreasing over time.

During the first semester 2013, the maximum total VOC concentration detected in samples from Tpsg-Tps wells was 36 µg/L in 817-PRX extraction well W-817-2318 (March). The maximum historic concentration of total VOCs detected in this HSU is 450 µg/L in monitor well W-815-01 in 1992. Limited recharge has led to insufficient water for sampling in some wells screened in the Tps-Tpsg HSU, including well W-815-01. This well has not been sampled since 1999. VOCs have remained below the 0.5 µg/L reporting limit in Tpsg-Tps well W-35C-05, located near the site boundary.

TCE is the main VOC detected in the Tpsg-Tps HSU. However, as described in the first paragraph of this section, other VOCs used in the calculation of total VOCs have also been detected. During the first semester 2013, concentrations of 1,1-DCE below its 6 µg/L MCL cleanup standard were detected in two samples collected from monitor well W-809-01. This well is screened in the Tpsg-Tpgs HSU and is located near the Building 815 source area.

During the first semester 2013, chloroform was detected at low concentrations of 1.6 µg/L or less in three Tpsg-Tps monitor wells: W-809-01, W-814-01 and W-815-1928. Other trihalomethanes, including bromodichloromethane (W-815-1928; 1.0 µg/L; March), have also been consistently reported in monitor well W-815-1928 at low concentrations. It is possible that a leaking chlorinated water source (e.g., leaking pipe) has impacted this well. Water has been observed discharging at the surface near this well.

Of the other VOCs used in the calculation of total VOCs, carbon tetrachloride, cis-1,2-DCE, and 1,2-DCA were detected only at one location in the Tpsg-Tps HSU during the first semester 2013: monitor well W-814-01. This well is located near the former Building 814 lagoon. During the first semester 2013, carbon tetrachloride was detected in well W-814-01 on one occasion, at concentration equal to the 0.5 µg/L State MCL, but below the 5 µg/L Federal MCL. During the first semester 2013, 1,2-DCA was detected in well W-814-01 on one occasion at a concentration slightly above the 0.5 µg/L MCL cleanup standard. During the first semester 2013, cis-1,2-DCE was detected in well W-814-01 at a concentration of 1.0 µg/L, significantly below the 6 µg/L MCL cleanup standard.

$Tnbs_2$ HSU

In the $Tnbs_2$ HSU, the VOC plume is detached and has migrated from its source near Building 815. As a result, the highest VOC concentrations are found downgradient of Building 815 in the 815-PRX extraction wellfield. Total VOC concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum concentration of 110 µg/L in extraction well W-818-08 (1992) to a first semester 2013 maximum VOC concentration of 43 µg/L in nearby monitor well W-818-11 (March).

During the first semester 2013, TCE was the main VOC detected in $Tnbs_2$ HSU, although 1,1-DCE, bromodichloromethane (not used in the calculation of total VOCs) and chloroform were also detected. During the first semester 2013, concentrations of 1,1-DCE below its 6 µg/L MCL cleanup standard were detected in several wells screened in the $Tnbs_2$ HSU. During the first semester 2013, both chloroform and bromodichloromethane were detected in the $Tnbs_2$ HSU in monitor well W-827-02 at concentrations of 1.3 µg/L or less; these concentrations are below the 80 µg/L MCL cleanup standard.

In February 2013, methylene chloride was detected in ground water at a concentration of 0.5 µg/L in $Tnsc_2$ HSU monitor well W-35C-07; this concentration is significantly below the 80 µg/L MCL cleanup standard.

VOCs continue to be detected in ground water from the $Tnbs_2$ HSU at the southern end of Building 832 Canyon. This contamination probably originates from sources located in both the Building 832 Canyon OU and in the HEPA OU. In June 2007, monitor well W-830-2216 was connected to the 830-DISS treatment facility as an extraction well. Since pumping began, VOC concentrations have steadily decreased from a maximum historic concentration of 20 µg/L in 2007 to a first semester 2013 concentration of 7.9 µg/L (April). A similar decrease in VOC concentrations has been observed in nearby monitor well W-830-13. During the first semester 2013, VOCs detected in wells W-830-2216 and W-830-13 were comprised entirely of TCE.

During the first semester 2013, TCE was detected at concentrations below the 5 µg/L MCL cleanup level in four routine samples collected from $Tnbs_2$ onsite guard wells W-815-2110 and W-815-2111 located near the Site 300 boundary. The maximum TCE concentration in these onsite guard wells during the first semester 2013 was 1.8 µg/L in guard well W-815-2110 (June). During the first semester 2013, VOCs were not detected in samples taken from any other onsite or offsite HEPA $Tnbs_2$ HSU guard well.

During the first semester 2013, VOC concentrations were below the 0.5 µg/L reporting limit in all 16 routine and duplicate samples collected monthly from offsite water-supply well GALLO1. Duplicate GALLO1 samples are collected monthly for quality assurance/quality

control purposes. Both the routine and duplicate samples were collected on the same date and sent to different laboratories for analysis.

At the 829-SRC treatment facility, VOC concentrations in ground water collected from extraction well W-829-06 ($Tnsc_{1b}$ HSU) have decreased from a historic maximum of 1,013 µg/L in 1993 to a first semester 2013 concentration of 13 µg/L (June). During the first semester 2013, VOCs detected in extraction well W-829-06 were comprised entirely of TCE at concentrations ranging from below the 5 µg/L MCL cleanup standard (3.3 µg/L) in March to above the cleanup standard (13 µg/L) in June. VOCs have never been detected in ground water from nearby monitor well W-829-1940 or in nearby monitor wells screened in the Lower $Tnbs_1$ HSU.

2.4.3.2.2. HE Compound Concentrations and Distribution

In the HEPA, HE compounds are present in the Tpsg-Tpg and $Tnbs_2$ HSUs. In the Tpsg-Tpg HSU, RDX was detected at a maximum concentration of 110 µg/L in monitor well W-809-04 during the first semester 2013 (March). This is the first RDX detection in this monitor well. During the first semester 2013, RDX was also detected in monitor well W-815-1928 at a concentration of 78 µg/L (March). The cause of these recent detections is unknown; however, as previously mentioned, it is possible that an underground water pipeline leak may be mobilizing residual contaminants in the vadose zone near these wells.

During the first semester 2013, HMX was detected in the Tpsg-Tps HSU at a maximum concentration of 23 µg/L (March) in monitor well W-809-04 and in well W-815-1928 at a concentration of 14 µg/L (March). RDX and HMX were not detected at concentrations above the 1 µg/L cleanup standard in any other ground water samples collected from the Tpsg-Tps HSU during the first semester 2013. However, because this HSU is only periodically saturated, many Tpsg-Tps monitor wells are frequently dry. The historic maximum RDX concentration detected in Tpsg-Tps HSU ground water is 350 µg/L (1998) in monitor well W-815-01; this well has been dry during all sampling attempts since 1999.

In the $Tnbs_2$ HSU, the maximum historic RDX concentration detected in ground water was 204 µg/L measured in 1992 in 817-SRC extraction well W-817-01. Although concentrations of HE compounds initially exhibited a steadily decreasing trend, since 2000, stable RDX concentration trends have been observed in most $Tnbs_2$ HSU wells located near the 815-SRC and 817-SRC treatment facilities. During the first semester 2013, the maximum RDX concentration in ground water collected from the $Tnbs_2$ HSU was 60 µg/L in 815-SRC extraction well W-815-02 (January). RDX has also been recently detected in monitor well W-809-03, which is located near injection well W-815-1918, but it was not detected above the 1 µg/L reporting limit in the March 2013 sample. Since 2009, RDX concentrations in extraction well W-815-04 have stabilized around 45 µg/L. A new extraction well for the 815-SRC facility (W-815-2803) was installed during the second semester 2012 to increase hydraulic capture of HE compounds and perchlorate in the 815 source area. During the first semester 2013, RDX concentrations detected in ground water in this extraction well were 23 µg/L (January) and HMX concentrations detected in ground water were 4.5 µg/L (January).

Overall, the leading (southwestern) edge of the RDX plume has remained relatively stable. However, RDX was detected for the first time in monitor well W-818-01, located on the southeast edge of the plume, at a concentration of 4.1 µg/L (March). During the first semester 2013, RDX was not detected in 815-PRX extraction wells W-818-08 and W-818-09. In March 2011, RDX was detected in ground water in extraction well W-818-09 for the first time at a

concentration of 2 µg/L, but has not been detected since then. During the first semester 2013, RDX was not detected at concentrations above the 1 µg/L cleanup standard in any $Tnbs_2$ HSU guard wells.

HMX detections in the $Tnbs_2$ HSU have occurred near the 815-SRC and 817-SRC treatment facilities. HMX concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum of 57 µg/L in 1995 (well W-817-01) to a first semester 2013 maximum concentration of 23 µg/L in the same well (February). HMX was also detected during the first semester 2013 at lower concentrations in the $Tnbs_2$ HSU in several ground water samples collected from 815-SRC wells, including extraction well W-815-02 and monitor well W-809-03.

During the first semester 2013, 4-ADNT was detected in ground water at a concentration of 14 µg/L (March) in only one well: monitor well W-809-04. The highest historic concentration of 4-ADNT detected in the HEPA OU was 24 µg/L, measured in extraction well W-817-01 on September 1997. During the first semester 2013, HE compounds such as 4-ADNT were only detected in wells where RDX was also present.

2.4.3.2.3. Perchlorate Concentrations and Distribution

During the first semester 2013, the maximum perchlorate concentration detected in Tpsg-Tps HSU ground water was 18 µg/L in monitor well W-6CS (March). This concentration is a new historic maximum for the Tpsg-Tps HSU. It is also a historic maximum concentration for this well (previous maximum concentration in W-6CS, 6.3 µg/L, March, 2012). Previously, the historic maximum perchlorate concentration detected in this HSU was 17 µg/L in the 817-PRX extraction well W-817-2318 in 2008.

In the $Tnbs_2$ HSU, perchlorate concentrations have decreased from a historic maximum of 50 µg/L (extraction well W-817-01, 1998) to a first semester 2013 maximum concentration of 31 µg/L in the same well (February). Perchlorate concentrations near 817-SRC extraction well W-817-01 remain stable relative to historical trends. Southeast of the 817-PRX treatment facility, the leading edge of the perchlorate plume expanded slightly and perchlorate was detected just above the reporting limit in monitor well W-6G (4.1 µg/L, March 2013). The last perchlorate detection in this well occurred in March 2007 at a concentration of 5.7 µg/L. Just beyond the southern edge of the current perchlorate plume, perchlorate was not detected above the reporting limit in monitor well W-818-06. In March 2011, perchlorate was detected in this well at a concentration of 4.3 µg/L.

Perchlorate concentrations reached a first semester 2013 concentration of 9.5 µg/L (March) in monitor well W-809-03 after increasing in 2002 due to the mobilization of perchlorate by injection of treated ground water into nearby 815-SRC injection well W-815-1918. During the first semester 2013, a perchlorate concentration of 13 µg/L (January) was detected in ground water collected from the recently installed well W-815-2803. This well was converted to an 815-SRC extraction well in December 2012. Perchlorate was not detected in any of the $Tnbs_2$ HSU guard wells during the first semester 2013.

Perchlorate concentrations in $Tnsc_{1b}$ HSU extraction well W-829-06 have decreased from a historic maximum of 29 µg/L (2000) to a first semester 2013 maximum concentration of 11 µg/L (June and July). Perchlorate was not detected above its reporting limit in monitor well W-829-1940 during the first semester 2013.

2.4.3.2.4. Nitrate Concentrations and Distribution

During the first semester 2013, the maximum nitrate concentration detected in ground water from the Tpsg-Tps HSU well W-6CS was 700 mg/L (March). Because there are no known nitrate sources near this well such as septic systems or other Site 300 operations, the source of this nitrate is unknown. It is possible that a pre-Site 300 sheep ranch discovered in a historic photo of the area may be the source of this localized elevated nitrate. Ground water sampled from all other wells screened in this HSU had significantly lower nitrate concentrations. During the first semester 2013, the maximum nitrate concentration found in other wells screened in this HSU was 130 mg/L in 817-PRX extraction well W-817-2318 (March).

During the first semester 2013, nitrate concentrations in ground water collected from the $Tnbs_2$ HSU ranged from <0.5 mg/L in the vicinity of the Site 300 boundary to a maximum of 140 mg/L in monitor well W-817-2609 (March). Well W-817-2609 was installed during 2010 to monitor remediation south of the 817-PRX treatment facility. During the first semester 2013, nitrate was not detected above the reporting limit in 12 samples collected from offsite water-supply well GALLO1, including duplicate samples. Duplicate samples are routinely collected as part of DOE/NNSA's quality assurance program. Nitrate was not detected above the 45 mg/L MCL cleanup standard in ground water from any of the $Tnbs_2$ HSU guard wells sampled during this reporting period.

During the first semester 2013, the maximum nitrate concentration detected in ground water collected from the $Tnsc_{1b}$ HSU was 75 mg/L (extraction well W-829-06, June). The nitrate concentration detected in monitor well W-829-1940 during the first semester 2013 was 37 mg/L (March).

Throughout the reporting period, nitrate concentrations measured in ground water in the HEPA OU continue to support the interpretation that nitrate is being degraded *in situ* by natural processes consistent with Monitored Natural Attenuation (MNA). Due to microbial denitrification, nitrate concentrations remain below the 45 mg/L cleanup standard in all wells near the southern site boundary where ground water is present under confined conditions.

2.4.3.3. HEPA OU Remediation Optimization Evaluation

Remediation at the HEPA OU is managed by balancing ground water extraction at the site boundary with pumping upgradient in the source and proximal areas. This strategy is designed to capture the leading edge of the VOC plume while minimizing the migration of multiple, co-mingled plumes from the source areas.

Contaminants in the Tpsg-Tps HSU, although limited in areal extent, include VOCs, perchlorate, HE compounds and nitrate. To remediate this HSU, efforts have been focused in the area with the highest concentrations located near 817-PRX extraction well W-817-2318. This extraction well removes ground water from the Tpsg-Tps HSU near Spring 5. Although remediation efforts are hampered by limited recharge, low ground water yield and dry conditions, concentrations of all COCs in the Tpsg-Tps HSU continue to decline with a few exceptions. Contaminants near Tpsg-Tps HSU monitor wells W-815-1928 and W-809-04 may have been mobilized by a nearby water source that has been observed in the past discharging at the surface near monitor well W-815-03. The source of this water is unknown. Contaminants identified in monitor well W-815-1928 include HE compounds, VOCs, and trihalomethanes (suggesting a chlorinated water source). HE compounds RDX and HMX were also detected for

the first time in Tpsg-Tps HSU monitor well W-809-04. This well is located downgradient of monitor well W-815-1928. As recommended in the HEPA Five-Year Review Report (Helmig et al., 2011), an additional monitor well will be drilled in fiscal year 2014 in the Tpsg-Tps HSU. The purpose of this well is to help determine contaminant concentrations in the deeper portions of the Tpsg-Tps HSU near monitor well W-815-01.

In the $Tnbs_2$ HSU, extraction wells W-818-08 and W-818-09 continue to capture the areas with the highest VOC concentrations. This extracted groundwater is treated at the 815-PRX treatment facility. During the early part of 2011, extraction flow rates were increased slightly at this facility, resulting in a larger zone of hydraulic capture. COC concentration trends in these wells remained stable during the first semester 2013, as these wells continue to capture contaminants from upgradient sources.

Extraction well flow rates at the 817-PRX facility are limited by the injection capacity of the two injection wells: W-817-02 and W-817-2109. To maximize injection capacity, treated ground water is now injected under pressure. This allowed for a moderate increase of 0.5 gpm in flow rate from W-817-03 for a total treatment facility rate of 2 gpm. As described in previous CMRs, one new $Tnbs_2$ HSU well, W-817-2609, was installed during 2010. Due to low yield, this well will remain a monitor well for the foreseeable future.

Extraction wells W-6ER and W-35C-04 capture VOCs along the southern site boundary at the leading edge of the VOC plume. Although total VOC concentrations in new extraction well W-815-2608 remain low (< 2 µg/L), the extraction well still helped to increased the total VOC mass removed from the 815-DSB treatment facility. In addition, due to dilution effects from well installation, the initial TCE concentrations observed in this well are expected to increase during the next few sampling events before stabilizing at a representative concentration. No other VOCs are present above the reporting limit in this extraction well.

Overall, the extent of the total VOC, perchlorate and nitrate plumes in the HEPA did not change significantly during the first semester 2013. RDX concentrations continue to fluctuate above and below the 1 µg/L reporting limit near the leading edge of the $Tnbs_2$ HSU plume. It is possible that continued pumping at this location has influenced the leading edge of the RDX plume resulting in a detection of 4.1 µg/L in monitor well W-818-01. In addition, HMX was detected for the first time in well W-6CD at a concentration 1.3 µg/L. Additional samples will be collected to confirm whether this result is representative. RDX and HMX were also detected for the first time in Tpsg-Tps monitor well W-809-04. This well is located near where an unknown water source (leaking pipe) was observed at the surface.

In the past, RDX concentrations exhibited a transient increase in monitor well W-809-03, possibly due to the mobilization of residual RDX in the vadose zone near 815-SRC injection well W-815-1918. However, during the first semester 2013, RDX was not detected in this monitor well. RDX concentration trends have remained stable since 2008 in 815-SRC extraction wells, W-815-02 and W-815-04.

Perchlorate concentrations in the $Tnbs_2$ HSU have decreased steadily since monitoring for this COC began in 1998. Historically, the 817-SRC (W-817-01) and 817-PRX (W-817-03 and W-817-04) extraction wells have had the highest perchlorate concentrations in the HEPA. Although perchlorate in monitor well W-809-03 increased recently due to the possible mobilization of this contaminant in the vadose zone by the injection of water into W-815-1918, this trend appears to have stabilized. Nitrate concentrations in the $Tnbs_2$ HSU near the Site 300

boundary continue to be at or near the reporting limit, demonstrating the continued effectiveness of monitored natural attenuation of nitrate even under pumping conditions.

The 829-SRC GWTS is a small facility that extracts and treats perched ground water located beneath the WAA in the $Tnsc_{1b}$ HSU. During the first semester 2013, treated ground water was diverted to a portable water tank rather than being injected in well W-829-08 to allow for additional resin and GAC loading evaluations. This diversion is not expected to have any long-term impact on mass removal at this facility. Long-term options for treating ground water at 829-SRC are currently under evaluation and any changes will be documented in future CMRs.

Throughout the reporting period, pumping from HEPA extraction wells has been effective in capturing COCs and preventing contaminated ground water from reaching the Site 300 southern boundary. During this time, VOCs were not detected at offsite water-supply well GALLO1 and VOCs in onsite guard wells W-815-2110 and W-815-2111 remained stable at very low concentrations. Upgradient and downgradient pumping will continue to be balanced so that hydraulic capture at the Site 300 boundary is maintained without accelerating migration from upgradient sources.

On June 28, 2012, newly-installed well W-815-2608 was connected to the 815-DSB treatment facility. This extraction well is expected to increase hydraulic capture near guard wells W-815-2110 and W-815-2111 and in the vicinity of offsite water-supply well GALLO1. TCE concentrations in these onsite guard wells have remained stable for the past three years. Close monitoring of VOC concentrations in the southern site boundary area will also continue, especially near offsite water-supply well GALLO1.

During the first semester 2013, the total VOC mass removed from all HEPA treatment facilities was 66.5 g; the total perchlorate mass removed was 34.9 g; the total RDX removed was 83.3 g. Table Summ-1 lists the mass removed by each individual HEPA treatment facility. Due to the recent wellfield expansion, the volume of ground water extracted from the 815-DSB treatment facility doubled from the first semester 2012, resulting in a thirty-six percent increase in VOCs removed. Due to a possible decrease in regional water levels, the volume of ground water extracted at the 815-PRX treatment facility decreased by 25% as compared to the first semester 2012. This decrease in flow rates, along with a small decrease in VOC concentrations in extraction wells W-818-08 and W-818-09, resulted in a 65% decrease in VOC removal. At 815-SRC treatment facility, the volume of ground water extracted increased slightly due to the addition of extraction well W-815-2803. This increase in volume resulted in 25% increase in RDX mass removed. At the 817-PRX treatment facility, due to a failing pump in extraction well W-817-03, the volume of ground water removed decreased by 50% as compared to the first semester 2013. This decrease in ground water extracted resulted in a decrease in the removal of VOCs and perchlorate. Nevertheless, due to an increase in RDX concentrations at W-817-03, the RDX mass removed increased at the 817-PRX treatment facility during the first semester 2013. Nitrate in the $Tnbs_2$ HSU undergoes *in situ* biotransformation to benign nitrogen gas by anaerobic-denitrifying bacteria.

2.4.3.4. HEPA OU Remedy Performance Issues

There were no new issues that affect the performance of the cleanup remedy for the HEPA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment.

2.5. Building 850/Pit 7 Complex OU 5

High explosive experiments were conducted at the Building 850 Firing Table from the 1950s until 2008. While explosives tests were conducted at Building 850, the firing table was covered with gravel to absorb the shock. The Building 850 Firing Table was routinely rinsed down with water after each experiment to reduce dust. Infiltrating water mobilized chemicals from the contaminated gravel to the underlying bedrock and ground water, however this practice was discontinued in 2004. Until 1989, gravels from the firing table surface were periodically removed and disposed of in several pits in the northwest part of the site.

A Corrective Action Management Unit (CAMU) was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action. A total of 27,592 cubic yards of polychlorinated biphenyl-, dioxin-, and furan-contaminated soil were excavated from the Building 850 Firing Table area, mixed with Portland cement and water, and consolidated and compacted to form the CAMU. Additional information on the Building 850 Removal Action is presented in the Building 850 Action Memorandum (Dibley et al., 2008b). Design information for the CAMU is presented in the construction subcontractor's 100% design submittal (SCS Engineers, 2009). The inspection and maintenance program for the CAMU program is described in Section 3. A map of the Building 850 area within OU 5 showing the locations of Building 850, the CAMU, and monitor wells are presented on Figure 2.5-1.

An *in situ* bioremediation treatability study for reduction of perchlorate in ground water immediately downgradient of Building 850 commenced in September 2011. A summary of the current status and preliminary results of the treatability study is presented in Section 2.5.2.2. Preliminary results indicate that the injection of ethyl lactate has resulted in bacterially-motivated reduction of perchlorate and nitrate in the treatment zone to concentrations below reporting limits. Uranium activities in ground water in the treatment zone have also declined as a result of reactions that promote uranium precipitation as a solid.

The Pit 7 Complex area within OU 5 consists of the Pit 3, 4, 5, and 7 Landfills. The Pit 7 Complex landfills were used to dispose of firing table debris and gravel. These pits were constructed by excavating topsoil and alluvial materials to an average depth of 15 to 20 feet (Taffet et al., 1989). The majority of the waste material in the pits came from the firing tables at Buildings 850 and 851, where aboveground detonations were conducted. The waste placed in the pits included wood, plastic, material and debris from tent structures, pea gravel, and exploded test assemblies, some of which contained tritium and depleted uranium.

When rainfall increased to above normal levels, such as during El Niño years, the pit waste and underlying bedrock were often inundated and residual contamination came into contact with shallow subsurface ground water. Ground water contaminants include tritium, uranium, perchlorate, nitrate, and VOCs.

In 1992, an engineered cap was constructed over the Pit 7 Landfill (referred to as the Pit 7 Cap) in compliance with Resource Conservation and Recovery Act (RCRA) requirements. The design included interceptor trenches and surface water drainage channels, a top vegetative layer to prevent erosion, a biotic barrier layer to minimize animal burrowing, and a clay layer of very low permeability to prevent infiltration of precipitation and shallow subsurface interflow that could result in leaching of contaminants. The Pit 7 cap also covers 100% of Pit 4 and approximately 25 to 30% of Pit 3. The original compacted native soil cover on most of Pit 3 and all of Pit 5 remains intact.

The Pit 7 Drainage Diversion System, completed in March 2008, was designed to prevent further releases of COCs from the pits and underlying bedrock to ground water. There are four components that comprise the drainage diversion system:

1. A subsurface drainage network on the western hillslope.
2. Upgraded riprap at the end of the existing north-flowing concrete channel for the Pit 7 Landfill cap.
3. A vegetated surface water diversion swale along the base of the eastern hill-slope, along the paved road (Route 4), including several culverts under Route 4 and dirt fire trails.
4. An upgraded surface water-settling basin at the south end of the existing south-flowing concrete channel for the Pit 7 Landfill cap.

Additional information on the Pit 7 cap and Drainage Diversion System design is presented in the Remedial Design Document for the Pit 7 Complex (Taffet et al., 2008). The detection monitoring, inspection, and maintenance program for the Pit 7 Complex Landfills and the inspection and maintenance program for the Drainage Diversion System are described in Section 3.

The Pit 7-Source (PIT7-SRC) GWTS began operation in May 2010. Three existing monitor wells, NC7-25, NC7-63 and NC7-64, were converted to extraction wells and three wells were drilled to serve as extraction wells (W-PIT7-2305, W-PIT7-2306 and W-PIT7-2307). Three additional wells, W-PIT7-2703, W-PIT7-2704, and W-PIT7-2705, were added to the extraction wellfield in 2012. The GWTS removes uranium, VOCs, nitrate, and perchlorate from ground water in wells within the Quaternary alluvium/Weathered bedrock (Qal/WBR) HSU (NC7-63, NC7-64, W-PIT7-2306, W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705), $Tnbs_1/Tnbs_0$ bedrock HSU (NC7-25), and both HSUs (W-PIT7-2305 and W-PIT7-2307). The GWTS extracts ground water at an approximate combined flow rate of 0.2 gpm. The current GWTS configuration includes three ion-exchange resin canisters for the removal of uranium followed by three ion-exchange resin canisters containing a perchlorate-selective resin that is also effective in removing nitrate. Ground water that has been treated to remove uranium, perchlorate, and nitrate is then piped through three aqueous-phase GAC canisters to remove VOCs. The treated water, which still contains tritium, is discharged to an infiltration trench.

A map of the Pit 7 Complex area within OU 5 showing the locations of the landfills, Drainage Diversion System, extraction and monitor wells, and the treatment system is presented on Figure 2.5-1.

The Building 850 area of OU 5 is discussed in Sections 2.5.1 and 2.5.2. The Pit 7 Complex area of OU 5 is discussed in Sections 2.5.3 through 2.5.5.

2.5.1. Building 850 Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-1. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; forty required analyses in ten wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples, four required analysis were not performed due to the bioremediation

treatability study, and sixteen required analyses were not performed due to an inoperable pump in wells K1-01C and NC2-17. The pump replacement for well NC2-17 is being scheduled. The pump replacement in well K1-01C was completed in July 2013.

2.5.2. Building 850 Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.5.2.1. Building 850 Area of OU 5 Contaminant Concentrations and Distribution

In the Building 850 area of OU 5, tritium and perchlorate are the primary COCs detected in ground water; depleted uranium and nitrate are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1$/$Tnbs_0$ HSUs. The locations of the wells discussed in the following text are shown on the Building 850 and Pit 7 Complex area site map (Figure 2.5-1).

2.5.2.1.1. Tritium Activities and Distribution

In the first semester 2013, the only groundwater sample with tritium activity exceeding the 20,000 pCi/L MCL cleanup standard was collected from monitor well NC7-70 (27,600 pCi/L, January), located approximately 20 feet downgradient (east) of the Building 850 Firing Table. During 2012, five wells (NC7-28, NC7-61, NC7-70, W-850-05, and W-850-2417) located downgradient of the firing table contained groundwater with tritium activities that exceeded the 20,000 pCi/L MCL cleanup standard. The maximum tritium activities in ground water downgradient of Building 850 have decreased from a historic maximum of 566,000 pCi/L (monitor well NC7-28, 1985) to the first semester 2013 maximum of 27,600 pCi/L in NC7-70 (January). Well NC7-28 is located about 225 feet east and downgradient of well NC7-70. The 2012 maximum tritium activity of 38,300 pCi/L also occurred in a sample from well NC7-70 (May). Overall, tritium activities continue to decline in most portions of the Building 850 plume with the exception of a slight increasing trend seen in ground water tritium activities in wells in the farthest downgradient portion of the plume near Pit 1.

Wells W-PIT2-2301 and W-PIT2-2302, both screened in the Qal/WBR HSU and located in Elk Ravine downgradient of the Pit 2 Landfill, did not contain sufficient water for sampling in first semester 2013. All samples collected in 2012 from these wells yielded tritium activities within background range (<100 pCi/L). Given the background activities of tritium in the Qal/WBR samples from previous years, tritium from Building 850 is apparently not present in this HSU downgradient of the Pit 2 Landfill.

During first semester 2013, the extent of tritium exceeding the 20,000 pCi/L MCL cleanup standard was limited to one well located immediately downgradient of the Building 850 Firing Table, and the extent of groundwater with tritium in excess of background is stable (similar to that of previous years).

2.5.2.1.2. Uranium Concentrations and Distribution

During the first semester 2013, uranium analyses were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS). High precision uranium isotope data (uranium-235/uranium-238 [$^{235}U/^{238}U$] atom ratio) for determining the presence of depleted uranium are only available by ICP-MS analysis. The presence of depleted uranium is indicated by a $^{235}U/^{238}U$ atom ratio of

less than 0.007. Historic uranium isotope data indicate that distributions of ground water containing some added depleted uranium extend downgradient about 1,200 feet within the Qal/WBR HSU, and 700 feet within the $Tnbs_1/Tnbs_0$ HSU, from the Building 850 Firing Table and have remained relatively stable.

Total uranium activities in ground water samples from two wells in the Building 850 area, wells NC7-28 and W-850-2315, exceeded the 20 pCi/L MCL cleanup standard during first semester 2013. The maximum first semester 2013 total uranium activity, a new historic maximum, was 24 pCi/L in the January sample from well NC7-28, located immediately downgradient of the Building 850 firing table. A subsequent sample, collected in May, had a total uranium activity of 9.8 pCi/L. Historically, well NC7-28 has yielded the highest uranium activities at Building 850. In 2012, the maximum total uranium activity in a ground water sample from this well was 18 pCi/L (October); however, ground water samples collected in January, May and July had total uranium activities of 2.8 pCi/L, 3.8 pCi/L and 11 pCi/L, respectively. Well NC7-28 is located immediately downgradient of ethyl lactate injection well W-850-2417 and it appears that reducing conditions resulting from the injection of ethyl lactate, during September-October 2011 (see Section 2.5.2.2), resulted in short-term decreases in uranium activity. Total uranium activities have rebounded as dissolved oxygen concentrations have risen. The other well with ground water total uranium activities exceeding the 20 pCi/L MCL cleanup standard during first semester 2013 was W-850-2315. The total uranium activity in the April ground water sample from well W-850-2315 was 21 pCi/L. Well W-850-2315 is completed in the $Tnbs_1/Tnbs_0$ HSU and is located 1,400 feet south-southeast (cross-gradient) of Building 850. In 2012, well W-850-2315 yielded the highest uranium activity in the Building 850 area (20 pCi/L, May).

Although depleted uranium has been detected in Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water downgradient of the Pit 2 Landfill and from wells in the $Tnbs_1/Tnbs_0$ HSU north of the Pit 2 Landfill, total uranium activities in recent years have been well below the 20 pCi/L MCL cleanup standard. During first semester 2013, the Qal/WBR HSU wells downgradient of Pit 2, W-PIT2-2301 and W-PIT2-2302, were not sampled due to insufficient water. Of the $Tnbs_1/Tnbs_0$ HSU wells located downgradient of Pit 2, NC2-08 and K2-01C, the ground water sample from well NC2-08 contained 2.7 pCi/L of natural uranium, and well K2-01C was not sampled due to an inoperable pump. The first semester 2013 ground water samples from $Tnbs_1/Tnbs_0$ HSU wells W-PIT2-1934 and W-PIT2-1935, located north of Pit 2, contained 3.9 pCi/L and 2.7 pCi/L, respectively. The $^{235}U/^{238}U$ atom ratio of the sample from well W-PIT2-1934 indicates some added depleted uranium; however, this most recent result continues an increasing trend toward a natural ratio.

2.5.2.1.3. Nitrate Concentrations and Distribution

Nitrate was detected at concentrations at or above the 45 mg/L cleanup standard in samples from ten Building 850 area wells during the first semester 2013. The first semester 2013 maximum nitrate concentration was 190 mg/L, a new historic local maximum, in the April ground water sample from monitor well NC7-29. The 2012 maximum nitrate concentration of 180 mg/L (May) was also detected in a ground water sample from monitor well NC7-29. Well NC7-29, screened in the $Tnbs_1/Tnbs_0$ HSU, is located south and cross-gradient of Building 850. During first semester 2013, ground water samples from three wells located directly downgradient of the Building 850 source area contained nitrate at concentrations at or above the 45 mg/L cleanup standard. Samples from wells NC7-61, NC7-27, and NC7-11 contained nitrate at

concentrations of 52 mg/L (January), 51 mg/L (April), and 45 mg/L (April), respectively. Nitrate concentrations in ground water at the two *in situ* bioremediation treatment zone wells upgradient of well NC7-61, monitor wells NC7-28 and W-850-2417, were below the 0.5 to 1 mg/L reporting limit in samples collected in May as a result of ethyl lactate injection in well W-850-2417 (see Section 2.5.2.2 for details on the treatability study).

Historic data indicate that ground water nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs are limited in extent and relatively stable. Overall, except for the *in situ* bioremediation treatment zone, the distribution and concentrations of nitrate in ground water are generally consistent, or have declined slightly from those observed in previous years.

2.5.2.1.4. Perchlorate Concentrations and Distribution

During first semester 2013, perchlorate concentrations exceeding the 6 µg/L MCL cleanup standard were detected in ground water samples from 19 wells east and south (downgradient) of Building 850 and south and east (downgradient) of Pit 1 and Pit 2 in and immediately north of Elk Ravine. Perchlorate concentrations are similar to or have decreased slightly from 2012. Except for wells NC7-28 and W-850-2417, wells downgradient of the Building 850 Firing Table, that are located within the *in situ* bioremediation treatment zone area, continue to exhibit the highest perchlorate concentrations in the Building 850 area. The first semester 2013 maximum perchlorate concentration of 44 µg/L was detected in a February sample from well NC7-61, located 550 feet east of the firing table and directly downgradient of the *in situ* bioremediation treatment zone and screened in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs. Perchlorate concentrations in routine and duplicate ground water samples collected from well NC7-61 in January, February, April and May ranged from 39 µg/L to 44 µg/L. Within the *in situ* bioremediation treatment zone area, all ground water samples from wells NC7-28 and W-850-2417, with the exception of the February sample from well NC7-28 that contained 5.8 pCi/L of perchlorate, contained perchlorate at concentrations below the 4 µg/L reporting limit.

During first semester 2013, the extent of ground water containing perchlorate concentrations in excess of the 6 µg/L MCL cleanup standard remained unchanged from 2012. Ground water with perchlorate concentrations in excess of the 6 µg/L MCL cleanup standard extends continuously 2,000 feet within the Qal/WBR HSU, and 800 feet within the $Tnbs_1/Tnbs_0$ HSUs, from Building 850 except for the area of the two *in situ* treatment zone wells where perchlorate concentrations are below the 4 µg/L reporting limit.

2.5.2.1.5. HE Compound Concentrations and Distribution

During first semester 2013, ground water samples from 21 wells located in or downgradient of the Building 850 Firing Table were collected and analyzed for HE compounds, including HMX and RDX, at a reporting limit, generally, of 1 µg/L. Contract laboratory reporting limits were higher in the past, varying from 5 to 20 µg/L. The lower reporting limits have enabled definition of the extent of HMX and RDX in Qal/WBR HSU ground water. The source appears to be the Building 850 Firing Table.

Of the 21 wells sampled for HE compounds in first semester 2013, NC7-61 was the only well, with RDX that exceeded its 1 µg/L cleanup standard. The January and April samples from this well had RDX concentrations of 4.2 µg/L (4.2 µg/L, both routine and duplicate samples) and 3.6 µg/L (2.5 µg/L for the routine sample and 3.6 µg/L for the duplicate sample), respectively. In 2012, two wells, W-850-2417 and NC7-61, exceeded the 1 µg/L RDX cleanup standard with

maximum concentrations of 5.3 µg/L (July) and 5.1 µg/L (July), respectively. In 2011, two wells, W-850-2417 and NC7-28, exceeded the 1 µg/L RDX cleanup standard with maximum concentrations of 6.5 µg/L (April) and 5.0 µg/L (April), respectively. During first semester 2013, RDX was not detected at concentrations above the reporting limit in wells W-850-2417 and NC7-28, and the RDX concentration in well NC7-61 had decreased. The decrease in RDX concentrations at these wells is the result of reducing conditions created following ethyl lactate injection into well W-850-2417 during September and October of 2011. All of the wells discussed above are located downgradient (east) of the Building 850 Firing Table with well NC7-61 located approximately 500 feet downgradient of the firing table.

During first semester 2013, four wells yielded samples containing HMX above the reporting limit. These wells, NC7-10, NC7-28, NC7-61, and W-850-2417 yielded first semester 2013 maximum concentrations of 1.7 µg/L, 4.3 µg/L, 8.1 µg/L, and 5.4 µg/L, respectively. The 2012 maximum HMX concentrations from these wells were 2.3 µg/L, 2.0 µg/L, 6.8 µg/L, and 5.5 µg/L, respectively. These concentrations are all significantly below the Regional Tapwater Screening Level for HMX (1,800 µg/L). Due to the insufficient water for sampling, the extent of HMX in ground water has decreased from its 2010 limit, when NC7-54 was last sampled and yielded HMX (800 feet east and southeast of the Building 850 Firing Table), to the vicinity of Qal/WBR HSU wells NC7-10 and NC7-11 (insufficient water for HE compounds analysis in first semester 2013). Sampling and analysis of water from monitor wells NC7-11 and NC7-54 in the future will determine whether the extent has truly diminished.

During first semester 2013, nitrobenzene was detected at concentrations above the reporting limit for the first time in ground water samples from the Building 850 Area. The April sample from well NC7-61 and the May samples from wells NC7-28 and W-850-2417 contained nitrobenzene with concentrations of 3.5 µg/L (duplicate sample analysis result, routine sample result was 2.7 µg/L), 4.1 µg/L, and 4.3 µg/L, respectively (the laboratory reporting limit ranged from 1.5 to 1.8 µg/L).

HE compounds were not detected above the reporting limit in ground water samples from wells screened in the $Tnbs_1$/$Tnbs_0$ HSU downgradient of Building 850 or from wells screened in the underlying $Tnsc_0$ HSU. The distribution of HE compounds in ground water at Building 850 is less extensive compared to observations made since 2008, when regular sampling and analysis for these chemicals commenced.

During first semester 2013, the extent of RDX is confined to well NC7-61, located approximately 500 feet downgradient (east) of the Building 850 Firing Table. HMX and nitrobenzene in ground water extend about 700 feet and 500 feet east of the firing table, respectively.

2.5.2.2. Building 850 Area of OU 5 Remediation Optimization Evaluation

MNA is the selected remedy for remediation of tritium in ground water emanating from the Building 850 area. Recent data indicate MNA continues to be effective in reducing tritium activities in ground water. The highest tritium activities in ground water continue to be located directly downgradient of the tritium sources at the Building 850 Firing Table and continue to decline. The extent of the 20,000 pCi/L MCL cleanup standard tritium activity contours in both the Qal/WBR and $Tnbs_1$/$Tnbs_0$ HSUs continues to diminish. During first semester 2013, only well NC7-70 contained ground water with a tritium activity that exceeded 20,000 pCi/L MCL cleanup standard, compared to five wells in 2012. The significant decreases in activities and

extent of the Building 850 tritium plume with activities exceeding the MCL cleanup standard indicate that natural attenuation (dispersion, radioactive decay and a decreasing source term) continues to be effective in reducing tritium activities in ground water. In general, ground water tritium activities continue to decline and are significantly below historic highs throughout the Building 850 plume. The leading edge of the tritium plume is stable, within the Site 300 interior, and is expected to attenuate within the boundaries of Site 300.

During first semester 2013, two wells in the Building 850 area had total uranium activities that exceeded the 20 pCi/L MCL cleanup standard. Samples from wells NC7-28 and W-850-2315 contained total uranium activities of 24 pCi/L (January) and 21 pCi/L (April), respectively. For well NC7-28, January was the second time, the first time being February 2008, that the total uranium activity exceeded the 20 pCi/L MCL cleanup standard since the well was first sampled in 1989. A subsequent sample collected in May from well NC7-28 contained 9.8 pCi/L of total uranium. Well W-850-2315 is located 1,400 feet south-southeast and cross-gradient of Building 850, and samples from this well, when analyzed by ICP-MS, have always yielded $^{235}U/^{238}U$ atom ratios indicative of natural uranium. During first semester 2013, the overall extent of total uranium activities at Building 850 has not changed significantly. The monitoring-only strategy for uranium at Building 850 continues to be protective given that: (1) total uranium activities in ground water in and downgradient from Building 850 for the most part remain below the 20 pCi/L MCL cleanup standard, and (2) the areal extent of depleted uranium has not changed during the period of monitoring. Temporal trends in $^{235}U/^{238}U$ isotope ratios from past samples have remained stable.

During first semester 2013, the overall extent and maximum concentrations of nitrate and perchlorate in ground water are also similar to those observed in 2012. Within the *in situ* perchlorate bioremediation treatment zone, perchlorate and nitrate concentrations in ground water samples from wells NC7-28 and W-850-2417 remained below reporting limits.

2.5.2.3. Building 850 Area of OU 5 Enhanced Bioremediation Treatability Study

The *in situ* perchlorate bioremediation treatability study commenced at Building 850 during the second semester 2011. The objective of this study is to evaluate the efficacy of *in situ* enhanced bioremediation methods in reducing perchlorate concentrations in Building 850 ground water. Prior to starting the test, perchlorate-bearing ground water was extracted from well W-850-2417 located directly downgradient of the Building 850 Firing Table, and was placed in an aboveground storage vessel. From mid-September to mid-October 2011, four five-gallon slugs of ethyl lactate, followed by a 50-gallon slug of the extracted perchlorate-bearing ground water, were injected into well W-850-2417. The 50 gallons of injected ground water mixed with and diluted the ethyl lactate, hastening its transport into the treatment zone. Nearby downgradient well NC7-28 and deeper well W-850-2416 were monitored to evaluate bioremediation performance.

In 2011, reducing conditions, as indicated by low dissolved oxygen concentrations (<1 mg/L) and negative oxidation-reduction potential (ORP), were measured in the treatment zone with *in situ* sensors within days of injection in well W-850-2417, and in less than 3 weeks at performance monitor well NC7-28. These reducing conditions continued through the end of 2011. The test remained in a monitoring and rebound mode through April 2012, when dissolved oxygen concentrations and ORP measurements indicated that reducing conditions no longer existed in the treatment zone. In April 2012, two individual slugs of 2.5 gallons of ethyl lactate

were followed by two slugs of 45 to 50 gallons of contaminant-bearing water previously extracted from well W-850-2417. Reducing conditions again returned to the treatment zone within days to weeks with low dissolved oxygen concentrations and negative ORP measured in the wells treatment zone wells.

Monitoring results indicate that microbial reduction significantly reduced perchlorate concentrations in wells W-850-2417 and NC7-28. Perchlorate concentrations in injection well W-850-2417 decreased from pre-test 2011 maximum of 74 µg/L to post-injection 2011 maximum of 13.6 µg/L. By January 2012, perchlorate concentrations in well W-850-2417 had further decreased to 11 µg/L, and were below the 4 µg/L reporting limit in the monthly ground water samples collected during the remainder of 2012 and during the first semester of 2013. Perchlorate concentrations in downgradient performance monitor well NC7-28 decreased from a pre-test 2011 maximum of 71.3 µg/L to below the 4 µg/L reporting limit in the 2011 post-injection samples. Perchlorate concentrations in well NC7-28 remained below reporting limits in all samples (with the exception of the February 2013 sample containing 5.8 µg/L) collected during 2012 and first semester 2013.

Although not specifically targeted for bioremediation, nitrate concentrations and uranium activities were also monitored in the injection well W-850-2417 and performance monitor well NC7-28. Nitrate concentrations in wells W-850-2417 and NC7-28 decreased from pre-test 2011 maximum concentrations of 52 mg/L and 57 mg/L, respectively, to below the 0.44 mg/L reporting limit following ethyl lactate injection in 2011. Nitrate concentrations remained below 0.5 mg/L to 1 mg/L reporting limits in all samples (with the exception of the January 2013 sample from well NC7-28 with a nitrate detection of 0.54 mg/L) collected from these wells during 2012 and first semester 2013. Total uranium activities in wells W-850-2417 and NC7-28 also decreased from pre-injection 2011 maximum activities of 9.1 pCi/L and 9.8 pCi/L, respectively, to 2011 post-injection activities of 3.5 pCi/L and 2 pCi/L, respectively. During 2012 and first semester 2013, the maximum uranium activity detected in samples from well W-850-2417 was 4.0 pCi/L, well below the pre-injection 2011 maximum activity. Uranium activities in well NC7-28 increased throughout 2012 and reached a maximum activity of 24 pCi/L (a new historic maximum) in the January 2013 ground water sample. The uranium activity in the May 2013 sample from well NC7-28 decreased to 9.8 pCi/L. The initial decrease in uranium activities is the result of concurrent reduction of U^{+6} species in ground water to U^{+4} species, which form insoluble solids. Later increases likely arise from a combination of oxidation of reduced uranium from solids on mineral surfaces back into solution and arrival of pre-existing dissolved uranium from upgradient.

To increase the volume of the *in situ* bioremediation treatment zone, slugs of ethyl lactate and extracted ground water will be injected into well NC7-70 during the second semester of 2013. The most recent perchlorate concentration for this well was 52 µg/L measured in the July 2013 ground water sample. During March 2013, prior to this new injection phase, fluorescein, a non-toxic tracer, was injected into NC7-70 with slugs of ground water extracted from the well to independently track the migration of injected fluids along the flow path from well NC7-70 downgradient through the treatment zone to wells W-850-2417, NC7-28, and NC7-61. As of August 2013, the tracer had not been detected in any of the downgradient wells. The regulatory agencies will be kept apprised of the results of the fluorescein injection and overall treatability study.

2.5.2.4. Building 850 Area of OU 5 Remedy Performance Issues

There were no new issues that affect the performance of the MNA cleanup remedy for tritium in the Building 850 area during this reporting period. The remedy for tritium continues to be effective and protective of human health and the environment, and to make progress toward cleanup. Perchlorate, uranium and RDX in ground water downgradient of the Building 850 Firing Table will continue to be closely monitored and reported. The *in situ* bioremediation treatability study analytical results will continue to be evaluated. The results of this evaluation will be presented in future CMRs. The performance of this technology with respect to uranium and RDX remediation or stabilization will also continue to be evaluated.

2.5.3. Pit 7 Complex Area of OU 5 Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; compliance summary; facility sampling plan evaluation and modifications; and treatment facility and extraction wellfield modifications.

2.5.3.1. Pit 7 Complex Area of OU 5 Facility Performance Assessment

The monthly ground water discharge volumes and rates and operational hours for the first semester of 2013 are summarized in Table 2.5-2. The total volume of ground water extracted and treated, and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester of 2013 are presented in Tables 2.5-3 through 2.5-6. The pH measurement results are presented in Appendix A.

2.5.3.2. Pit 7 Complex Area of OU 5 Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the PIT7-SRC GWTS during first semester 2013:

- The GWTS was secured for well recovery from January 10 to January 14 and April 4.
- Extraction well NC7-25 was shut off from January 28 to January 30 for well recovery.
- Extraction well W-PIT7-2307 shut down due to pump intake issues. The pump was removed, flushed and reinstalled at a new depth on February 5 and extraction from this well was resumed on February 13.
- The GWTS shut down on March 2 due to a site-wide power outage and automatically restarted when power was restored that same day.
- Extraction well NC7-63 will be converted to a monitoring well due to continued lack of ground water.
- The system was shut down on May 22 to repair a pinhole leak in the discharge pump apparatus, and was restarted on June 6.

2.5.3.3. Pit 7 Complex Area of OU 5 Compliance Summary

PIT7-SRC GWTS operated within compliance with the RWQCB Substantive Requirements for Wastewater Discharge throughout the reporting period.

2.5.3.4. Pit 7 Complex Area of OU 5 Facility Sampling Plan Evaluation and Modifications

The PIT7-SRC treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The treatment facility sampling and analysis plan is presented in Table 2.5-7. No modifications to the plan were made during this reporting period.

2.5.3.5. Pit 7 Complex Area of OU 5 Treatment Facility and Extraction Wellfield Modifications

The only modifications made to the system during this reporting period included the conversion of NC7-63 from an extraction well to a monitor well.

2.5.4. Pit 7 Complex Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-8. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; fifty-eight required analyses in thirteen wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples.

2.5.5. Pit 7 Complex Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.5.5.1. Pit 7 Complex Area of OU 5 Mass Removal

The monthly ground water mass removal estimates for the first semester of 2013 are summarized in Table 2.5-9. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.5.5.2. Pit 7 Complex Area of OU 5 Contaminant Concentrations and Distribution

In the Pit 7 Complex area of OU 5, tritium is the primary COC in ground water, and uranium, perchlorate, nitrate and VOCs are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1$/$Tnbs_0$ HSUs. The locations of the wells discussed in the following text are shown on the Building 850 and Pit 7 Complex area site map (Figure 2.5-1).

2.5.5.2.1. Tritium Activities and Distribution

Commingled plumes of tritium in ground water extend from Pit 3 and Pit 5 Landfill sources. The Pit 7 Landfill is not an apparent source of tritium to ground water as most of the tritium-bearing experiments at Site 300 were conducted prior to its opening in 1979 (Taffet et al., 2008) and monitor well NC7-48, located directly downgradient of Pit 7 and upgradient of Pit 3, has generally yielded ground water samples that contain tritium activities within background ranges.

The ground water sample collected from well NC7-48 in April 2013 contained less than 100 pCi/L of tritium.

Tritium activities in the Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 2,660,000 pCi/L (NC7-63, 1998) to a first semester 2013 maximum activity of 141,000 pCi/L (monitor well NC7-51, April). The 2012 maximum tritium activity of 233,000 pCi/L was also from monitor well NC7-51 (January). Well NC7-51 is located about 40 feet northeast of Pit 5 and 60 feet east of Pit 3. Overall, most tritium activities in Qal/WBR ground water have declined slightly since 2012. In the Qal/WBR HSU, the region of ground water containing tritium in excess of the MCL cleanup standard extends about 1,300 feet southeast from the northern edge of Pit 3. The extent of the 20,000 pCi/L MCL cleanup standard ground water tritium activities in the Qal/WBR HSU in the Pit 7 Complex area is similar to that observed for 2012.

Tritium activities in the $Tnbs_1/Tnbs_0$ HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 770,000 pCi/L in 1999 to a first semester 2013 maximum tritium activity of 206,000 pCi/L (April). Both the historic and 2013 maximum tritium activities were detected in extraction well NC7-25, located about 250 feet downgradient (northeast) of the Pit 3 Landfill. In general, tritium activities in the $Tnbs_1/Tnbs_0$ HSU are similar or have declined slightly compared to 2012 measurements. The highest tritium activities in $Tnbs_1/Tnbs_0$ HSU in Pit 7 Complex area ground water, in excess of the 20,000 pCi/L MCL cleanup standard, continue to extend about 800 feet northeast of Pit 3 and Pit 5. The extent of tritium in excess of the 20,000 pCi/L MCL cleanup standard in the $Tnbs_1/Tnbs_0$ HSU in the Pit 7 Complex area is also similar to 2012 observations.

Overall, the extent of tritium in ground water with activities in excess of the 100 pCi/L background levels remains stable, and is similar to that observed in 2012.

2.5.5.2.2. Uranium Concentrations and Distribution

Depleted uranium was previously released to ground water from sources in the Pits 3, 5 and 7 Landfills (Taffet et al., 2008). Uranium activities in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 781 pCi/L (monitor well NC7-40, 1998) to a first semester 2013 maximum of 106 pCi/L (extraction well NC7-64, April). The 2012 maximum activity of 94 pCi/L was also detected in NC7-64. The maximum historic uranium activity detected in NC7-64 is 252 pCi/L (1998). Well NC7-64 is located directly downgradient (east) of Pit 3. Uranium activities exceeded the 20 pCi/L MCL cleanup standard in samples from 10 wells in the Qal/WBR HSU during first semester 2013. In first semester 2013, wells W-PIT7-1903 was dry, and W-PIT7-1917 and W-PIT7-1919 were not sampled due to insufficient water. All of the wells with uranium activities exceeding the 20 pCi/L MCL cleanup standard are proximal to the landfills and have historically shown $^{235}U/^{238}U$ isotopic ratios indicating some depleted uranium. The extent of uranium in excess of the MCL cleanup standard in the Qal/WBR HSU is confined to an area directly east of Pit 3 and another area that extends about 500 feet southeast from the center of Pit 5. The spatial extent of shallow ground water impacted with depleted uranium has been stable since the mid-1990s. Areas of depleted uranium in ground water are bounded by wells that exhibit ground water isotope mass ratios indicative of natural uranium. Sorption and ion-exchange may be responsible for slowing the migration of depleted uranium in ground water compared to conservative contaminants such as tritium.

The maximum uranium activity in a first semester 2013 sample from a well screened in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs was 21 pCi/L in the June sample from extraction well W-PIT7-2307.

Uranium activities in the $Tnbs_1/Tnbs_0$ HSU have decreased from a historic maximum of 51.45 pCi/L in 1998 to a first semester 2013 maximum of 33 pCi/L (April). Maximum uranium activities in the bedrock were detected in samples from extraction well NC7-25, located about 250 feet downgradient (northeast) of the Pit 3 Landfill. Well NC7-25 is the only $Tnbs_1/Tnbs_0$ HSU well that historically and currently yields ground water containing uranium in excess of the MCL cleanup standard. All historic and current $^{235}U/^{238}U$ atom ratio data indicate that the uranium in NC7-25 ground water is natural. Ground water samples from wells screened in the $Tnbs_1/Tnbs_0$ HSU have not shown depleted uranium mass ratios, indicating that depleted uranium has not migrated downward into the $Tnbs_1/Tnbs_0$ HSU.

As is the case for the Building 850 portion of OU 5, uranium activity analyses for the first semester 2013 were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma-Mass Spectrometry **(**ICP-MS).

2.5.5.2.3. Nitrate Concentrations and Distribution

During the first semester 2013, nitrate was detected at concentrations at or above the 45 mg/L MCL cleanup standard in samples from three Pit 7 Complex area monitor wells, K7-01, NC7-47 and W-PIT7-13, during the first semester 2013. Well K7-01 is located immediately downgradient of Pit 5 and wells NC7-47 and W-PIT7-13 are located downgradient and northeast of the Pit 7 Complex area.

The first semester maximum nitrate concentration detected in the Pit 7 Complex area was 64 mg/L in the April sample from $Tnbs_1/Tnbs_0$ HSU well NC7-47, located northeast and far downgradient of Pit 3. Well NC7-47 was also the location of the 2012 maximum nitrate concentration of 65 mg/L. The first semester 2013 maximum nitrate concentration in the Qal/WBR HSU was 43 mg/L (April) from extraction well NC7-64, located immediately downgradient of Pit 3.

Historic data indicate that nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water are limited in extent and relatively stable. The distribution and concentrations of nitrate in ground water during first semester 2013 are generally similar to what was observed in 2012.

2.5.5.2.4. Perchlorate Concentrations and Distribution

During first semester 2013, perchlorate was detected at concentrations exceeding the 6 µg/L MCL cleanup standard in 15 wells directly northeast and southeast of the landfills.

Perchlorate concentrations in the Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 40 µg/L (extraction well W-PIT7-2306, 2009) to a first semester 2013 maximum concentration of 12 µg/L, in the April samples from well NC7-51, and Qal/WBR HSU extraction wells W-PIT7-2305 and W-PIT7-2705, all located immediately downgradient of Pit 5. The Qal/WBR HSU wells that yielded samples containing perchlorate in excess of the 6 µg/L MCL cleanup standard define an area that extends southeast about 1,000 feet from the middle of Pit 3.

Samples from four $Tnbs_1/Tnbs_0$ HSU wells, K7-03, NC7-25 ($Tnbs_1/Tnbs_0$ HSU extraction well), NC7-68 and W-PIT7-2309, contained perchlorate in excess of the 6 µg/L MCL cleanup standard with concentrations of 7.6, 12, 11 and 6.9 µg/L (April), respectively, and define an area that extends about 400 feet downgradient (northeast) of Pits 3 and 5.

The overall extent of perchlorate in ground water in the Pit 7 Complex area did not change significantly from 2012 to the first semester 2013.

2.5.5.2.5. VOC Concentrations and Distribution

The VOC COCs in Pit 7 Complex Area ground water include TCE and 1,1-DCE. VOCs were detected in ground water samples from four Pit 7 Complex area wells: one well completed in the Qal/WBR HSU (monitor well NC7-51), one completed in the $Tnbs_1/Tnbs_0$ HSU (monitor well K7-03), and two completed in both HSUs (monitor well K7-01 and extraction well W-PIT7-2307). All four wells contained TCE concentrations above the 0.5 µg/L reporting limit, but below the MCL cleanup standard of 5 µg/L. 1,1-DCE was only detected in the sample from extraction well W-PIT7-2307 with a concentration above the 0.5 µg/L reporting limit, but below the MCL cleanup standard of 6 µg/L. During 2012, VOCs were also detected in Qal/WBR HSU extraction wells W-PIT7-2306 and W-PIT7-2704. Neither of these wells was sampled during the first semester 2013 due to insufficient water.

Total VOC concentrations in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 21.2 µg/L in 1995 (monitor well NC7-51, comprised of 15 µg/L of TCE and 6.2 µg/L of 1,1-DCE) to a first semester 2013 maximum of 1.2 µg/L (NC7-51, April, comprised entirely of TCE). The 2012 maximum of 6.2 µg/L (comprised of 4.5 µg/L of TCE and 1.7 µg/L of 1,1-DCE) was collected from extraction well W-PIT7-2306; this well was not sampled during first semester 2013 due to insufficient water.

The first semester 2013 maximum total VOC concentration in a Pit 7 Complex well was 6.6 µg/L (comprised of 4.8 µg/L of TCE and 1.8 µg/L of 1,1-DCE) in extraction well W-PIT7-2307 (June); the 2012 maximum in the same well was 3.7 µg/L (comprised of 2.8 µg/L TCE and 0.85 µg/L 1,1-DCE). During the first semester 2013, the ground water level remained below the Qal/WBR contact and entirely in the $Tnbs_1/Tnbs_0$ HSU. W-PIT7-2307 was the only well sampled in the Pit 7 Complex area that contained concentrations of 1,1-DCE above the 0.5 µg/L reporting limit during the first semester 2013.

The data indicate that the extent of VOCs in ground water is limited to the area directly downgradient of Pit 5. Individual VOC concentrations were below cleanup standards in all Pit 7 Complex wells sampled during the first semester 2013, and have been since 2011, when extraction wells W-PIT7-2306 and W-PIT7-2307 yielded samples with TCE concentrations slightly above the 5 µg/L cleanup standard.

2.5.5.3. Pit 7 Complex Area of OU 5 Remediation Optimization Evaluation

Ground water extraction and treatment at the PIT7-SRC facility began in March 2010. Well field expansion operations in the second semester of 2012 added wells W-PIT7-2703, W-PIT7-2704 and W-PIT7-2705 to the Pit 7 extraction wellfield. In addition to the new extraction wells, extraction of groundwater from NC7-25, screened in the $Tnbs_1/Tnbs_0$ bedrock HSU, was initiated and the pump intake in well W-PIT7-2307 was raised to target the Qal/WBR HSU. During the first semester 2013, the PIT7-SRC facility operated nearly continuously following the well field expansion of 2012. Almost 47,000 gallons of water were extracted and

treated during this semester, a 52% increase over the first semester 2012. The combined average pumping rate from extraction wells to the treatment facility increased from 0.14 gpm during 2012 to 0.22 gpm during the semester 2013. Well W-PIT7-2305 contributed approximately 72% of the flow to the PIT7-SRC facility at an average long-term extraction rate of 0.15 gpm. Concentrations of COCs in well W-PIT7-2305 ground water have fluctuated since pumping started in 2010, but have shown decreases from pre-pumping conditions to present. For example:

- Tritium activities decreased from 73,900 pCi/L (January 2010) to 39,700 pCi/L (April 2013).
- Uranium activities decreased from 21 pCi/L (January 2010) to 15 pCi/L (April 2013). Since 2008, the water from this well has contained only natural uranium.
- TCE concentrations were below the 0.5 µg/L reporting limit (January 2010), were reported at 0.63, 0.67 and 0.52 µg/L in May 2010, October 2010 and April 2011, respectively, and have remained below the 0.5 µg/L reporting limit since October 2011.
- Perchlorate concentrations have decreased slightly from 14 µg/L (January 2010) to 12 µg/L (April 2013). Perchlorate concentrations increased slightly to 17 µg/L in April 2012 and then decreased to 12 µg/L in December 2012.
- Nitrate concentrations remained virtually unchanged from 41 mg/L (January 2010) to 42 mg/L (April 2013). Concentrations in this well have varied from 44 mg/L (August 2008) to 38 mg/L (March 2011).

To increase uranium mass removal, pumping of $Tnbs_1/Tnbs_0$ HSU well NC7-25 was initiated in August 2012. The uranium in this well has always exhibited a natural $^{235}U/^{238}U$ atom ratio but has historically exceeded the uranium MCL cleanup standard. During the first semester 2013, approximately 850 gallons of water (approximately 2% of the flow to PIT7-SRC facility), at a long-term average flow rate of 0.004 gpm, were extracted and treated from well NC7-25. The total uranium activity and $^{235}U/^{238}U$ atom ratio data will be monitored closely to assess the effect of ground water extraction from the $Tnbs_1/Tnbs_0$ HSU.

An assessment of water levels and ground water COC trends at well W-PIT7-2307 during the first year of ground water extraction and treatment at PIT7-SRC (March 2010 to March 2011) indicated that the extracted ground water from well W-PIT7-2307 was derived primarily from the $Tnbs_1/Tnbs_0$ bedrock HSU. Pumping was suspended in early March 2011 to avoid pulling contaminants from Qal/WBR HSU ground water into the $Tnbs_1/Tnbs_0$ HSU. In early February, the pump intake was raised to target the Qal/WBR HSU. Approximately 200 gallons of water were extracted and treated during February and March of 2013 before water levels dropped below the pump intake. Due to lower than average rainfall received during rainfall years 2011-2012 and 2012-2013, water levels have remained below the pump intake.

Extraction well NC7-63 was offline during 2012 and the first semester 2013 due to insufficient water. Due to the lack of water and the extremely low yield, the decision was made to convert this well back to a monitor well and in June 2013 the pump was removed. Wells W-PIT7-2306 and W-PIT7-2704 also contained insufficient water for pumping during first semester 2013.

With the addition of ground water extracted from the new extraction wells and well NC7-25, the volume of ground water extracted during the first semester of the year increased from

31,000 gallons in 2012 to 47,000 gallons in 2013 (a 52% increase). Almost 97% of the extracted water was obtained from three wells: W-PIT7-2305 and new extraction wells W-PIT7-2703 and W-PIT7-2705. Mass removal of COCs, except for VOCs, also increased during the first semester 2013 compared to the same time period in 2012. The most significant increase was the mass of uranium removed. Pumping of wells NC7-25, W-PIT7-2703, and W-PIT7-2705, all containing uranium with activities that exceed the 20 pCi/L MCL cleanup standard, resulted in the removal of an estimated 17 grams of uranium during the first semester of 2013 compared to an estimated 2.6 grams during the first semester 2012, a 650% increase. Approximately 5 to 10% of the total mass of uranium removed was depleted uranium. The decrease in VOCs mass removal was due to insufficient water for pumping in wells W-PIT7-2306 and W-PIT7-2704. The only VOCs removed during the first semester of 2013 were from the well W-PIT7-2307, which only yielded an estimated 200 gallons of ground water.

2.5.5.4. Pit 7 Complex Area of OU 5 Remedy Performance Issues

There were no new issues that affect the performance of MNA for tritium in the Pit 7 Complex area during this reporting period. MNA for tritium continues to be effective and protective of human health and the environment, and to make progress toward cleanup. The extraction and treatment of uranium, perchlorate, VOCs and nitrate continues to reduce the concentrations and mass of these contaminants in Pit 7 Complex ground water. As stated in the previous section, extraction well W-PIT7-2305 pumped the majority of ground water, and concentrations of uranium and activities of tritium in samples collected from the well remain similar to 2012. Uranium activities in these samples remained below MCL cleanup standards. Continued operation of the PIT7-SRC facility and extraction from the three new extraction wells and well NC7-25 have increased the volume of extracted ground water and mass removed. However, sustainable yields from all the extraction wells are generally low (<0.1 gpm) and thus large increases in mass removal over time are not anticipated.

During the first semester 2013, tritium activities in treated effluent from PIT7-SRC were in the range of 47,500 pCi/L to 50,600 pCi/L. Performance monitor wells K7-01, NC7-16 and NC7-21, located near the effluent discharge trench continue to exhibit decreasing tritium trends. The tritium activities in these wells will continue to be closely monitored to assess any negative impacts to the distribution of tritium in ground water.

The performance summary of PIT7-SRC indicates that:

- Progress has been made in reducing COC concentrations towards cleanup standards: Uranium activities to-date have remained relatively stable, and those in excess of MCL cleanup standards are limited in extent. TCE concentrations have dropped below the MCL cleanup standard. Perchlorate concentrations are stable to decreasing. Nitrate concentrations and distribution have decreased from historic maxima.
- The extent of uranium in excess of the MCL cleanup standard in the Qal/WBR HSU continues to be confined to an area immediately east of Pit 3 and another area that extends from Pit 5 southeast about 500 feet. The extents of both these regions have remained stable and similar to what has been observed over the last few years. The sample results from new extraction well W-PIT7-2704, completed at the northeast corner of Pit 5, indicate that the uranium in Qal/WBR HSU ground water in excess of the cleanup level is less extensive than previously depicted.

- Generally, tritium activities in wells downgradient of the infiltration trench are stable or decreasing, indicating that the discharge of tritium-bearing water is not adversely impacting downgradient ground water.

As discussed in the Remedial Design (RD) for the Pit 7 Complex (Taffet et al., 2008), the drainage diversion system design was not intended to capture 100% of the precipitation that falls in the Pit 7 Complex area. Rather, it was designed to divert excess surface water runoff and shallow subsurface recharge from the hillslopes to the west and east of the Pit 7 Complex landfills during high intensity storms and periods of extreme rainfall (i.e., the 1997-1998 El Niño) to minimize ground water contact with the pit waste and underlying contaminated bedrock. Thus, the drainage diversion system performance can best be evaluated during a future El Niño season or other period of very high rainfall.

Criteria indicating that the drainage diversion system is not operating as intended and corresponding recent performance include:

1. Ground water elevation responses to rainfall events observed in key monitoring wells are similar to those observed before the installation of the drainage diversion system:
   - Drainage diversion system performance is evaluated by 22 monitor wells outfitted in April 2010 with dedicated pressure transducers that measure ground water elevations.
   - Review of these data indicates that ground water elevation responses to rainfall are less than those observed prior to drainage diversion system installation in several wells. For example, in 2005, prior to installation of the drainage diversion system, ground water elevation in well NC7-17, located downgradient of the drainage diversion system at the south end of Pit 7, increased 5 inches per inch of rain received. In 2011, after installation of the drainage diversion system, ground water elevation increased less than 4 inches per inch of rain received for the same time period during the water year. These data indicate a 20% reduction in ground water elevation response to rainfall in well NC7-17 after installation of the drainage diversion system. Total precipitation received during water years 2004-2005 and 2010-2011 was greater than average and almost identical at 13.7 inches and 13.5 inches, respectively. Precipitation received during rainfall years 2011-2012 and 2012-2013 was below average and water elevation response evaluations have not been performed for these time periods.
2. Maximum ground water rises into the pit waste and underlying contaminated bedrock as indicated by ground water elevation data:
   - During and following the 2009-2010, 2010-2011, 2011-2012, and 2012-2013 rainfall seasons, ground water levels have remained well below the bottoms of the Pit 7 Complex Landfills. Ground water elevations in the Qal/WBR HSU have decreased since spring 2011 due to below average rainfall received during rainfall years 2011-2012 (approximately 7 inches) and 2012-2013 (approximately 8 inches).
3. Increasing trends in tritium, uranium, VOCs, or perchlorate activities/concentrations are observed over a period of at least four quarters in ground water samples from key wells downgradient of the landfills:
   - COC trends in Pit 7 Complex ground water are decreasing:

- Tritium activities decreased from a historic maximum of 2,660,000 pCi/L in 1998 to a first semester 2013 maximum tritium activity of 206,000 pCi/L.
- Uranium activities have decreased from a historic maximum of 781 pCi/L in 1998 to a first semester 2013 maximum of 106 pCi/L.
- Nitrate concentrations have decreased from the historic maximum of 363 mg/L in 2003 to a first semester 2013 maximum of 64 mg/L.
- Perchlorate concentrations have decreased from a historic maximum of 40 µg/L in 2009 to a first semester 2013 maximum of 12 µg/L.
- Total VOC concentrations have decreased from a historic maximum of 21.2 µg/L in 1995 to a first semester 2013 maximum of 6.6 µg/L, with concentrations of all VOC COCs below cleanup standards.

Based on the evaluation of data collected during the first semester 2013 against the performance criteria, the drainage diversion system appears to be operating as intended. However, it is important to note that the drainage diversion system is designed to divert recharge during peak events and has not yet been tested under the conditions for which it was designed.

2.6. Building 854 OU 6

The Building 854 Complex has been used to test the stability of weapons and weapon components under various environmental conditions and mechanical and thermal stresses. A map of the Building 854 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.6-1.

Three GWTSs are currently operated in the Building 854 OU; Building 854-Source (854-SRC), Building 854-Proximal (854-PRX), and Building 854-Distal (854-DIS). One SVTS is also operated at the 854-SRC facility.

The 854-SRC GWTS began operation in December 1999 removing VOCs and perchlorate from ground water. Ground water extraction was expanded in September 2006 from one well, W-854-02, extracting at a flow rate of approximately 1 gpm, to include wells W-854-18A, W-854-17, and W-854-2218 currently extracting at an approximate combined flow rate of 1.7 gpm. The GWTS configuration includes a particulate filtration system, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC units connected in series for VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses.

A SVTS began operation at the 854-SRC in November 2005. Soil vapor is currently extracted from well W-854-1834 at an approximate flow rate of 45 to 50 scfm. This system consists of vapor-phase GAC to remove VOCs from extracted soil vapor. Treated vapors are discharged to the atmosphere under a permit issued by the San Joaquin Valley Air Pollution Control District.

The 854-PRX GWTS began operation in November 2000 removing VOCs, nitrate, and perchlorate from ground water. Ground water is currently extracted at an approximate flow rate of 1.5 gpm from well W-854-03, located southeast of the Building 854 complex. The GWTS configuration includes two ion-exchange resin columns connected in-series for perchlorate removal, three aqueous-phase GAC units connected in series for VOC removal, and an aboveground containerized wetland biotreatment for nitrate removal prior to being discharged

into an infiltration trench. In 2007, the treatment system was modified to replace the solar power with site power to increase the volume of extracted ground water by operating the GWTS 24-hours a day.

The 854-DIS GWTS is solar-powered and began operation in July 2006 removing VOCs and perchlorate from ground water. Ground water is extracted from well W-854-2139. The current operational flow rate averaged over time is approximately 700 to 800 gallons per month. The GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate treatment followed by three aqueous-phase GAC units connected in series for VOC removal prior to discharge to an infiltration trench.

2.6.1. Building 854 OU Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; receiving water monitoring; compliance summary; and sampling plan evaluation and modifications.

2.6.1.1. Building 854 OU Facility Performance Assessment

The monthly ground water discharge volumes and rates and operational hours for the first semester of 2013 are summarized in Tables 2.6-1 through 2.6-3. The total volume of ground water treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and the masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester of 2013 are presented in Tables 2.6-4 and 2.6-5. The pH measurement results are presented in Appendix A.

2.6.1.2. Building 854 OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 854-SRC GWTS and SVTS, and 854-PRX and 854-DIS GWTSs during the first semester of 2013:

854-SRC GWTS and SVTS

- The GWTS was found offline on January 3 due to a rodent-damaged well transducer in extraction well W-854-02. The system was restarted on January 7 extracting from well W-854-2218. Repairs were completed and the well was restarted on January 29.
- Extraction well W-854-18A was shut down from December 17 to February 12 to protect against freeze damage.
- The SVTS shut down on February 5 due to interlock issues. The treatment system ran intermittently while the issue was evaluated.
- Extraction well W-854-02 was shut down on February 16 due to a cracked fitting.
- The GWTS shut down on March 2 due to a site-wide power outage and automatically restarted when power was restored that same day. The SVTS also shut down on March 2 and was restarted March 4.
- The GWTS temporarily shut down on March 20 due to a level switch error.

- The systems were secured on March 26 because the pump in extraction well W-854-2218 was failing. The systems were restarted on March 27 extracting from well W-854-02 only.
- The GWTS was secured from May 6 to May 8 to perform resin maintenance and install check valves.
- The GWTS was secured from June 27 to July 1 to address software issues.

854-PRX GWTS

- The GWTS was secured from December 17 to March 12 to protect against freeze damage and while infiltration trench injection test and hydraulic test were performed. The hydraulic and infiltration trench injection tests were completed and the facility was restarted on March 12.
- The GWTS was secured from June 10 to June 24 to repair a flow meter.

854-DIS GWTS

- The GWTS was secured from December 17 to February 12 to protect against freeze damage.

2.6.1.3. Building 854 OU Compliance Summary

The 854-SRC, 854-PRX, and 854-DIS GWTSs all operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. The 854-SRC SVTS operated in compliance with San Joaquin Valley Air Pollution Control District permit limitations.

Nitrate concentrations in the 854-PRX GWTS extraction well and facility influent have remained below the 45 mg/L nitrate cleanup standard since February 2010. During hydraulic testing conducted in February 2013, nitrate was detected at a concentration of 49 mg/L in an effluent sample collected on February 13, 2013. However, the effluent was being collected in a bubble tank during the entire test. The collected water was tested upon completion of the testing, and the nitrate was found to be below the discharge limit of 45 mg/L. Therefore, the 854-PRX GWTS remained within compliance.

2.6.1.4. Building 854 OU Facility Sampling Plan Evaluation and Modifications

The Building 854 OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.6-6. The only modifications to the plan included no effluent monitoring at 854-PRX in January due to the system being shut down for freeze protection and for hydraulic test preparation, and no monitoring at the 854-DIS in January due to freeze protection.

2.6.1.5. Building 854 OU Treatment Facility and Extraction Wellfield Modifications

There were no treatment facility or extraction wellfield modifications made to the 854-PRX, 854-DIS, or 854-SRC GWTSs, or the 854-SRC SVTS, during the reporting period.

2.6.2. Building 854 OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.6-7. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: twenty-four required analyses in seven wells were not performed because the wells were dry or there was either insufficient water in the wells to collect the samples.

2.6.3. Building 854 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

2.6.3.1. Building 854 OU Mass Removal

The monthly ground water mass removal estimates for the first semester of 2013 are summarized in Tables 2.6-8 through 2.6-10. The total mass removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.6.3.2. Building 854 OU Contaminant Concentrations and Distribution

At the Building 854 OU, VOCs (TCE) and perchlorate are the primary COCs detected in ground water; nitrate is a secondary COC. These COCs have been identified primarily in the $Tnbs_1/Tnsc_0$ HSU. The locations of the wells discussed in the following text are shown on the Building 854 Operable Unit site map (Figure 2.6-1).

2.6.3.2.1. VOC Concentrations and Distribution

During first semester 2013, the maximum concentration of VOCs in $Tnbs_1/Tnsc_0$ HSU ground water was 92 µg/L (extraction well W-854-02, February). TCE comprises all of the VOCs observed in ground water at Building 854, except for low cis-1,2-DCE concentrations detected in samples from monitor well W-854-17 and extraction well W-854-2139. During first semester 2013, the maximum cis-1,2-DCE ground water concentrations samples from these wells were 2.1 µg/L (May) and 0.66 µg/L (April) for W-854-17 and W-854-2139, respectively, below the 6 µg/L MCL cleanup standard. Overall, VOC concentrations in the $Tnbs_1/Tnsc_0$ HSU have decreased nearly two orders of magnitude from a historic pre-remediation maximum of 2,900 µg/L (extraction well W-854-02, 1997).

Two VOC plumes exist in the $Tnbs_1/Tnsc_0$ HSU: a northern plume and a less extensive southern plume. The northern plume encompasses the 854-SRC and 854-PRX areas and is separated from the southern plume by a region where VOC concentrations are below the 0.5 µg/L reporting limit (at wells W-854-1902 and W-854-1822). The southern plume is in the vicinity of former water-supply Well 13. While the extent of VOCs impacting Building 854 ground water with concentrations above the 0.5 µg/L reporting limit has remained relatively stable since remediation began: (1) the portion of the northern VOC plume with concentrations greater than 50 µg/L has decreased and is currently limited to the immediate vicinity of the Building 854 source area; (2) the extent of the northern VOC plume with concentrations greater

than 10 µg/L has decreased; and (3) the extent of the southern VOC plume with concentrations greater than 5 µg/L has decreased significantly.

VOCs were also detected in shallow perched ground water in monitor well W-854-10 (screened in the $Tnbs_1$ unit but above the $Tnbs_1/Tnsc_0$ HSU) located in the Building 854 source area during first semester 2013 at 3.1 µg/L (May). During first semester 2013, as in previous years, VOCs were not detected in the sample from monitor well W-854-14, located near Building 858 and screened in a perched zone in the $Tnbs_1$, also above the $Tnbs_1/Tnsc_0$ HSU, or in the sample from the one Qls monitor well, W-854-15, that contained water.

The maximum historic VOC (entirely TCE) vapor concentration within the Building 854 OU was measured in 854-SRC SVTS extraction well W-854-1834 (4.4 $ppm_{v/v,}$ November 2005). The maximum first semester 2013 TCE vapor concentration for this well was 0.31 $ppm_{v/v}$, measured in the January 2013 sample collected during normal vapor extraction operation.

2.6.3.2.2. Perchlorate Concentrations and Distribution

The maximum perchlorate concentrations in $Tnbs_1/Tnsc_0$ HSU ground water are generally decreasing from the historic maximum of 27 µg/L in 2003 to a first semester 2013 maximum of 16 µg/L (May). Both the historic and recent maximum perchlorate concentrations were detected in monitor well W-854-1823, located downgradient of the 854-PRX facility. Perchlorate at this location is not currently captured by any ground water extraction well(s).

The distribution of perchlorate in $Tnbs_1/Tnsc_0$ HSU ground water observed during first semester 2013 is similar to its extent in 2012 and previous years. During first semester 2013, perchlorate was not detected in ground water samples from any well screened in the Qls HSU or perched $Tnbs_1$ water-bearing zones.

2.6.3.2.3. Nitrate Concentrations and Distribution

During first semester 2013, the maximum nitrate concentration in Building 854 OU area ground water was 62 mg/L in the May ground water sample collected from monitor well W-854-05, screened in the Qls HSU. Two additional wells, extraction well W-854-02 and monitor well W-854-2611, both screened in the $Tnbs_1/Tnsc_0$ HSU, contained nitrate with concentrations of 54 mg/L and 53 mg/L, respectively, exceeding the 45 mg/L MCL cleanup standard. During first semester 2013, all wells containing ground water with nitrate concentrations exceeding the 45 mg/L MCL cleanup standard were located in the vicinity of the Building 854 complex. During first semester 2013, nitrate concentrations in wells W-854-14 and W-854-45, located near Building 858, decreased to 32 mg/L and 14 mg/L, respectively, below the 45 mg/L MCL cleanup standard and their respective 2012 maximum concentrations of 230 mg/L and 48 mg/L.

2.6.3.3. Building 854 OU Remediation Optimization Evaluation

Since the 2006 expansion of the 854-SRC GWTS wellfield, the total volume of extracted ground water and contaminant mass removed has exhibited a steadily decreasing trend. During first semester 2013, 62 g of VOC mass were removed compared to 93 g during first semester 2012. Some of the decrease in VOC mass removal during first semester 2013 is due to reduced operation time as explained in Section 2.6.1.2. Ground water extraction continues to adequately capture the highest VOC concentrations. Increased flow rates would increase the total volume of ground water treated and VOC mass removal at 854-SRC. During first semester 2013, pumping in extraction well W-854-02 was converted from fixed flow rate to level operation. Testing and

adjustment work was not yet completed at the end of first semester 2013. Full-time operation is expected during second semester 2013 and increased volumes of extracted ground water and greater contaminant mass removal are expected.

In first semester 2013, the 854-SRC soil vapor extraction well W-854-1834 yielded TCE vapor concentrations of 0.31 $ppm_{v/v}$ and 0.27 $ppm_{v/v}$, in January and April, respectively. During first semester 2013, the 854-SRC SVTS removed 400 g of VOC vapor mass, compared to 440 g, removed during first semester 2012. When operating, over the last seven years despite declining VOC vapor concentrations, VOC mass continues to be removed from the source area due to relatively high vapor flow rates. This VOC mass is likely volatilizing from vadose zone sources beneath the Building 854 source area and VOC vapors from the underlying dissolved VOC plume in $Tnbs_1/Tnsc_0$ ground water. Due to continued removal of VOC mass, DOE/LLNL plan to operate the 854-SRC SVTS until vapor concentrations remain below reporting limits after extended shutdown periods and SVE shutoff criteria have been met. Over the next five years, it will be determined if prerequisites to begin an SVE system shut-off evaluation have been attained as described in Appendix C of the Site 300 Site-Wide Record of Decision (U.S. DOE, 2008).

During first semester 2013, the 854-PRX GWTS removed 10 g of VOC mass compared to 22 g of VOC mass during first semester 2012. The reduction in VOC mass removal was mainly the result of fewer facility hours of operation due to freeze protection shutdown in January and hydraulic testing operations in February. Hydraulic testing of well W-854-03 during first semester 2013 indicated that a sustained flow rate of 5 gpm or more is possible. However, the results of an infiltration trench capacity test performed during first semester 2013 indicated that a 5 gpm infiltration rate would exceed the capacity of the trench. As discussed in the Draft Second Building 854 OU Five-Year Review (Valett et al., 2013), DOE is planning to pump well W-854-03 at a flow rate of 2.5 gpm upon completion of well and facility upgrades in second semester 2013. It is expected that the increased flow rate will increase plume capture and mass removal.

During first semester 2013, the 854-DIS GWTS removed 0.58 g of VOC mass. In first semester 2012, the GWTS removed 1.0 g of VOC mass. The one extraction well at the 854-DIS GWTS (W-854-2139) pumps at a low average rate of less than 800 gallons per month because the formation around the well becomes rapidly dewatered and the well cannot sustain prolonged pumping.

Samples for nitrate isotopic analysis and excess nitrogen measurement were collected from twenty wells and springs in the Building 854 OU between 2002 and 2013. Enriched nitrate isotopic composition, low nitrate concentration, and high proportion of excess N_2 to nitrate concentration provide strong evidence of denitrification in ground water from Tmss well W-854-1731. Denitrification is also indicated by the enriched nitrate isotopic composition of the ground water sample from Spring 11, although it may be the result of local surficial rather than subsurface ground water processes. In the $Tnbs_1/Tnsc_0$ HSU, the combined effects of the complex geologic and hydrogeologic conditions make data interpretation more challenging. The distribution of nitrate, nitrate isotopic compositions, and excess nitrogen concentration are best explained as being the result of some localized denitrification coupled with dilution due to dispersion and diffusion. The complete evaluation of the Building 854 OU nitrate data is presented in the Second Five-Year Review for the Building 854 OU.

2.6.3.4. Building 854 OU Remedy Performance Issues

There were no new issues that affect the performance of the cleanup remedy for the Building 854 OU during this reporting period. The overall remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

2.7. Building 832 Canyon OU 7

Building 832 Canyon facilities were used to test the stability of weapons and associated components under various environmental conditions. Contaminants were released from Buildings 830 and 832 through piping leaks and surface spills during testing activities at these buildings.

Three GWTSs and two SVTS are operated in the Building 832 Canyon OU: Building 832-Source (832-SRC), Building 830-Source (830-SRC), and Building 830-Distal South (830-DISS). The 832-SRC and 830-SRC facilities extract and treat both ground water and soil vapor, while the 830-DISS facility extracts and treats ground water only.

A map of Building 832 OU showing the locations of monitor and extraction wells and treatment facilities is presented on Figure 2.7-1.

The 832-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in September and October 1999, respectively. Initially, ground water was extracted from nine wells at a combined total flow rate that initially ranged from 30 to 300 gpd. The total flow eventually dropped to 5 to 50 gpd due to lowering of the water table by pumping. In early 2005, the source area extraction wellfield was reduced to two wells (W-832-12 and W-832-15) operating with vacuum enhancement and a combined flow rate ranging from 60 to 220 gpd. In late 2005, the extraction wellfield was expanded to include three additional downgradient wells (W-832-01, W-832-10, and W-832-11). As a result, the combined flow rate increased to about 1,300 gpd, and VOC concentrations in 832-SRC facility influent increased four-fold. Well W-832-25 was connected to the 832-SRC facility in July 2006. Currently, ground water is extracted from wells W-832-01, W-832-10, W-832-11, W-832-12, W-832-15 and W-832-25 at an approximate combined flow rate of 0.16 gpm. Soil vapor is extracted from wells W-832-12 and W-832-15 at an approximate combined flow rate of approximately 3.0 to 4.4 scfm. The current GWTS configuration includes two ion-exchange resin columns connected in series to remove perchlorate, and three aqueous-phase GAC units (also connected in series) to remove VOCs. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses. A positive displacement rotary lobe blower is used to create a vacuum at selected wellheads through a system of piping manifolds. The contaminated vapors are treated using three vapor-phase GAC units connected in series. Treated soil vapors are then discharged to the atmosphere under a permit issued by the San Joaquin Valley Air Pollution Control District.

The 830-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in February and May 2003, respectively. Ground water was extracted from four wells at a total flow rate ranging from 5 to 100 gpd. The 830-SRC extraction wellfield was expanded in 2006; seven GWTS extraction wells (W-830-49, W-830-1829, W-830-2213, W-830-2214, W-830-57, W-830-60, and W-830-2215) were added to the original three (W-830-1807, W-830-19, and W-830-59). The expansion well testing began in 2006. The tests were completed and the expanded wellfield

was in full operation during the first semester 2007. During the second semester 2009, both wells W-830-1829 and W-830-2213 were converted back to monitor wells due to lack of water for extraction. In early 2010, the 830-SRC GWTS was modified so that ground water extracted from higher flow Upper $Tnbs_1$ HSU extraction wells (W-830-2215, W-830-60, and W-830-57) was routed around the 830-SRC ion-exchange canisters. Perchlorate has not been detected above the reporting limit (4 µg/L) since 2005 in these wells. This bypass is expected to improve the operation of the treatment facility by decreasing backpressure, allowing for increased ground water flow and mass removal rates. Ground water extracted from low-flow $Tnsc_{1a}$ well W-830-2214 still contains perchlorate above the discharge limit; this well does not bypass the perchlorate treatment system. The 830-SRC GWTS is currently extracting ground water at a combined flow rate of approximately 5 to 7 gpm. The GWTS configuration includes a Cuno filter for particulate filtration, two ion-exchange resin columns connected in-series to remove perchlorate, and three in-series aqueous-phase GAC units to remove VOCs. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses. The 830-SRC soil vapor extraction wellfield was also expanded to include well W-830-49 in 2006. Soil vapor is extracted from wells W-830-1807 and W-830-49 using a liquid ring vacuum pump at a current combined flow rate of approximately 30 to 33 scfm. The contaminated vapors are treated using three vapor-phase GAC units connected in series. Treated soil vapors are then discharged to the atmosphere under a permit issued by the San Joaquin Valley Unified Air Pollution Control District.

The 830-DISS GWTS began operation in July 2000, removing VOCs, perchlorate, and nitrate from ground water. During a typical year, approximately 1 to 2.5 gpm of ground water is extracted from extraction wells W-830-51 and W-830-52 using natural artesian pressure and less than 0.5 gpm of ground water is extracted from well W-830-53 using natural artesian pressure. The GWTS configuration consisted of two aqueous-phase GAC units in series to remove VOCs, two in-series ion-exchange resin columns to remove perchlorate, and three bioreactor units for nitrate reduction. These units were open-container wetland bioreactors containing microorganisms that use nitrate during cellular respiration. Acetic acid was added to the process stream as a carbon source. Treatment system effluent was discharged via a storm drain that discharges to the Corral Hollow alluvium. At the request of the RWQCB, the facility was modified during the first semester 2007 to cease discharge of treated water to a surface water drainage way. The modification included the addition of a fourth well, W-830-2216, to the extraction wellfield. The GWTS is now extracting ground water at a combined flow rate of approximately 2 to 4 gpm. Currently, extracted ground water flows through ion-exchange canisters to remove perchlorate at the 830-DISS location. The water is piped to the Central GSA GWTS for VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses.

2.7.1. Building 832 Canyon OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

2.7.1.1. Building 832 Canyon OU Facility Performance Assessment

The monthly ground water and soil vapor discharge volumes, rates, and operational hours for the first semester of 2013 are summarized in Tables 2.7-1 through 2.7-3. The total volume of ground water and vapor extracted and treated and mass removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and mass removed are summarized in Table Summ-2. Analytical results for influent and effluent samples collected during the first semester of 2013 are presented in Tables 2.7-4 and 2.7-5. The pH measurement results are presented in Appendix A.

2.7.1.2. Building 832 Canyon OU Operations and Maintenance Issues

The following maintenance activities and operational issues occurred at the 832-SRC GWTS and SVTS, 830-SRC GWTS and SVTS, and 830-DISS GWTS during the first semester of 2013:

830-SRC GWTS and SVTS

- The SVTS was offline from October 29 to February 25 due to a failed blower. The new blower was installed on February 6.
- Extraction wells W-830-19, W-830-49, W-830-59, W-830-1807, and W-830-2214 were secured to protect against damage caused by freezing temperatures on December 13. Extraction wells W-830-19, W-830-59, and W-830-2214 were restarted on February 20. Extraction wells W-830-49 and W-830-1807 remain off in order to conduct a rebound test.
- The systems were shut down from March 2 to March 4 due to a site-wide power outage.
- A cracked pipe fitting was found on March 14 at the transfer tank. Therefore, extraction wells W-830-57, W-830-60, W-830-2214, and W-830-2215 were secured to make repairs. Well W-830-49 was shut down on March 14 to repair a vapor leak. The systems and remaining extraction wells were shut down on March 19 while a resin change-out was performed and repairs were completed. The facilities were restarted on March 21 extracting from all wells.
- The systems were secured from June 11 to June 13 to repair a leak in the effluent discharge line to the misting tower.

832-SRC GWTS and SVTS

- The GWTS/SVTS were secured from December 17 to January 7 to protect against freeze damage. The expansion wellfield remained shut down after restart. The system was again shut down on January 14 to repair freeze-damaged pipes. Repairs were completed on January 23. Both systems were restarted on February 20 extracting from wells W-832-12 and W-832-15. The expansion wells were restarted on March 4.
- The systems were shut down from March 2 to March 4 due to a site-wide power outage.
- The SVTS was shut down on March 11 due to a blower unit failure. The GWTS was secured on March 12 to turn off the power to repair the SVTS. New belts were installed on March 19. Both systems were restarted on March 20.

830-DISS GWTS

- The GWTS was shut down due to Central GSA GWTS shutdowns on the following dates:
  - December 19 to January 7
  - March 7 until March 18
  - April 18 to May 6
  - June 18 to June 19
- The GWTS shut down on January 15 because the Central GSA GWTS was offline. The system remained down due to freeze damage at the well field totalizers. The totalizers were repaired on February 6.
- The perchlorate ion-exchange resin was changed on February 11. The system was restarted on February 25.
- The system was shut down from March 2 to March 4 due to a site-wide power outage.
- The pump in extraction well W-830-2216 was replaced on March 6.

2.7.1.3. Building 832 Canyon OU Compliance Summary

The 830-SRC, 832-SRC, and 830-DISS GWTSs operated in compliance with RWQCB Substantive Requirements during the reporting period. The 830-SRC SVTS operated in compliance with the San Joaquin Valley Air Pollution Control District permit limitations.

2.7.1.4. Building 832 Canyon OU Facility Sampling Plan Evaluation and Modifications

The Building 832 Canyon OU treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.7-6. No modifications were made to any of the plans during this reporting period.

2.7.1.5. Building 832 Canyon OU Treatment Facility and Extraction Wellfield Modifications

No treatment facility or wellfield modifications were made to any of the OU 7 GWTSs or SVTSs during this reporting period.

2.7.2. Building 832 Canyon OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.7-7. This table explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; forty-four required analyses in fourteen wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples.

2.7.3. Building 832 Canyon OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

2.7.3.1. Building 832 Canyon OU Mass Removal

The monthly ground water and soil vapor mass removal estimates for the first semester of 2013 are summarized in Tables 2.7-8 through 2.7-10. The total masses removed during the reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

2.7.3.2. Building 832 Canyon OU Contaminant Concentrations and Distribution

At the Building 832 Canyon OU, VOCs (mostly TCE) are the primary COCs detected in ground water. The compound cis-1,2-DCE is a COC at both the Building 830 and 832 source areas; chloroform and PCE are COCs at the Building 830 source area. Perchlorate and nitrate are the secondary COCs. These constituents have been identified primarily in the Qal/WBR HSU, $Tnsc_{1b}$ HSU and $Tnsc_{1a}$ HSU. VOCs have also been detected at low concentrations in Building 832 Canyon OU in the $Tnbs_2$ and Upper $Tnbs_1$ HSUs.

2.7.3.2.1. VOC Concentrations and Distribution

VOCs detected in Building 830 area ground water consist primarily of TCE. During the first semester 2013, the other VOCs present above the reporting limit in the Building 830 area were chloroform, PCE, cis-1,2-DCE, and trans-1,2-DCE. Of these VOCs, only TCE and trans-1,2-DCE were detected at concentrations above their respective MCL cleanup standard. VOC concentrations and distribution are discussed by HSU below.

Since remediation in the Building 830 source area, VOC concentrations in Qal/WBR HSU ground water near 830-SRC have decreased by an order-of-magnitude from a historic maximum of 10,000 µg/L (well SVI-830-035, 2003) to a first semester 2013 maximum concentration of 890 µg/L (well SVI-830-035, February).

VOC concentrations detected in soil vapor continue to decline in the Building 830 source area. VOC concentrations collected from dual extraction well W-830-1807 have decreased from a historic maximum concentration of 35 $ppm_{v/v}$ in 2004 to a first semester 2013 maximum concentration of 1.0 $ppm_{v/v}$ (February). VOC concentrations detected in soil vapor collected from dual extraction well W-830-49 have decreased from a historic maximum concentration of 259 $ppm_{v/v}$ in 2007 to a first semester 2013 concentration of 0.89 $ppm_{v/v}$ (May).

VOCs detected in Building 832 area ground water consist primarily of TCE. During the first semester 2013, the other VOCs present above the reporting limit in the Building 832 source area were cis-1,2-DCE, chloroform and Freon 11. Of these VOCs, only TCE was present in the Building 832 area at concentrations above its MCL cleanup standard.

Since remediation began in 1999 in the Building 832 source area, VOC concentrations in wells screened in the Qal/WBR HSU have decreased from a historic maximum of 1,800 µg/L (well W-832-18, 1998) to a first semester 2013 maximum concentration of 100 µg/L in monitor well W-832-23 (February). Well W-832-23 is screened in the Qal/WBR and $Tnsc_{1b}$ HSUs. During the first semester 2013, ground water samples for VOC analyses were not collected from several other wells located in the Building 832 source area because the water table dropped below the screened intervals in these wells.

VOC concentrations in soil vapor are also declining in the Building 832 source area. VOC concentrations detected in soil vapor samples collected from well W-832-15 have decreased from a historic maximum concentration of 1.8 $ppm_{v/v}$ in 2001 to a first semester 2013 concentration of 0.18 $ppm_{v/v}$ (April). VOCs detected in well W-832-12 have decreased from a maximum concentration of 1.1 $ppm_{v/v}$ in 2008 to a first semester 2013 concentration of 0.085 $ppm_{v/v}$ (April).

During the first semester 2013, VOC concentrations in ground water samples taken from Qal/WBR HSU guard wells W-35B-01 and W-880-02, located south of Building 832 Canyon near the Site 300 southern boundary, were below reporting limits (<0.5 µg/L), except on one occasion. In June, PCE was detected in ground water samples collected from guard well W-880-02 at 0.52 µg/L, slightly above the reporting limit. Beginning in 1999, TCE and PCE were routinely detected at concentrations slightly above the reporting limit in this guard well; however, since 2006, only PCE has been detected above the reporting limit. VOC concentrations in these two guard wells have decreased from a historic maximum of 1.9 µg/L in well W-35B-01 in 2001.

Since remediation began in 2000 in the Building 830 source area, VOC concentrations in ground water in the $Tnsc_{1b}$ HSU have decreased from a historic maximum concentration of 13,000 µg/L in extraction well W-830-49 (2003) to a first semester 2013 maximum concentration of 2,500 µg/L in monitor well W-830-19 (April). At the 830-DISS treatment facility, VOC concentrations in $Tnsc_{1b}$ HSU artesian wells W-830-51, W-830-52, and W-830-53, have decreased from a historic maximum of 170 µg/L (extraction well W-830-51, 2002) to a first semester 2013 maximum concentration of 28 µg/L in W-830-51 and W-830-52 (January). Farther south along Building 832 Canyon, the leading edge of the $Tnsc_{1b}$ VOC plume continues to be contained within Site 300 boundary based on total VOC concentrations below the 0.5 µg/L reporting limit in guard wells W-880-03, W-830-1730 and W-4C. During 2012, a new monitor well, W-830-2806, was installed to the southwest of the Building 830 source area in the $Tnsc_{1b}$ HSU. During the first semester 2013, VOCs were not detected in this monitor well.

Since remediation of the $Tnsc_{1a}$ HSU began in early 2007, VOC concentrations in ground water have generally decreased from 1,700 µg/L (monitor well W-830-27, 1998) to a first semester 2013 maximum concentration of 1,000 µg/L in extraction well W-830-2214 (March). Although the current maximum concentration is less than the historic maximum in all $Tnsc_{1a}$ HSU wells, concentrations in extraction well W-830-2214 have been increasing since 2009. This well was installed in 2006 and has exhibited a steadily increasing TCE trend since that time. Because of the low yields and limited recharge of this extraction well, increased pumping and hydraulic capture from this well is not possible. As recommended in the 2011 Five-Year Review (Helmig et al., 2011), a downgradient $Tnsc_{1a}$ well, W-830-2701, was installed in 2011. During the first semester 2013, VOC concentrations in ground water in W-830-2701 reached a maximum of 16.0 µg/L (June). A step-drawdown hydraulic test was conducted at this well in April 2013 and the well will be connected to the 830-SRC treatment facility in fiscal year 2014.

Since remediation began in the Upper $Tnbs_1$ HSU, VOC concentrations in ground water have decreased from a historic maximum of 100 µg/L (monitor well W-830-28, 1998) to a first semester 2013 maximum concentration of 25 µg/L in monitor well W-830-18 (February). During the first semester 2013, VOCs were not detected above the 0.5 µg/L reporting limit in Upper $Tnbs_1$ guard wells W-830-15 and W-832-2112.

As described in the High Explosives Process Area section, well W-830-2216 extracts ground water from the $Tnbs_2$ HSU. Contamination in this well is probably due to a combination of sources located in the HEPA and Building 832 Canyon OUs. Since extraction began in 2007, VOC concentrations in extraction well W-830-2216 have been consistently declining. During the first semester 2013, the maximum concentration of TCE in extraction well W-830-2216 was 7.9 µg/L (April). During the first semester 2013, the TCE concentration in nearby monitor well W-830-13 was 7.1 µg/L (April). TCE was the only VOC detected in W-830-2216 and W-830-13 during the first semester 2013. The extracted ground water is treated at the 830-DISS treatment facility.

2.7.3.2.2. HE Compound Concentrations and Distribution

Including the first semester 2013, HE compounds have never been detected in ground water in any Building 832 Canyon OU wells.

2.7.3.2.3. Perchlorate Concentrations and Distribution

During the first semester 2013, the maximum perchlorate concentration detected in ground water in the Qal/WBR HSU was 13 µg/L (monitor well W-832-13, February). In 1998, perchlorate concentrations detected in Qal/WBR HSU ground water reached a historic maximum of 51 µg/L in Building 830 source monitor well W-830-34. The maximum perchlorate concentration detected in ground water near the Building 830 source area during the first semester 2013 was 4.5 µg/L (February) in extraction well W-830-1807. During the first semester 2013, perchlorate was not detected above the 4 µg/L reporting limit in Qal/WBR HSU guard wells W-35B-01 and W-880-02.

As discussed, during the first semester 2013, the maximum perchlorate concentration detected in ground water in the $Tnsc_{1b}$ HSU was 13 µg/L (monitor well W-832-13, February). Historically, monitor well W-830-58 has contained the highest perchlorate ground water concentration (26 µg/L, 2001) in the $Tnsc_{1b}$ HSU. This well is located in the Building 830 source area and during the first semester 2013, the perchlorate concentration in ground water collected from this well was 6.2 µg/L (March). Perchlorate was not detected above the reporting limit in $Tnsc_{1b}$ HSU guard wells W-830-1730, W-4C or W-880-03 during the first semester 2013.

During the first semester 2013, the maximum perchlorate ground water concentration detected in the $Tnsc_{1a}$ HSU was 8.2 µg/L in extraction well W-832-25 (March). The historic maximum perchlorate concentration (13 µg/L) was detected in 1999 in this same extraction well. Perchlorate was not detected above the 4 µg/L reporting limit in new monitor well W-830-2806 or new planned extraction well W-830-2701 during the first semester 2013.

During the first semester 2013, perchlorate was not detected above the reporting limit of 4 µg/L in any ground water samples collected from the Upper $Tnbs_1$ HSU.

2.7.3.2.4. Nitrate Concentrations and Distribution

During the first semester 2013, nitrate concentrations in ground water remained high in the vicinity of the Building 832 and 830 source areas and low or below the reporting limit (<0.5 mg/L) in the downgradient, deeper parts of all Building 832 Canyon HSUs. During the first semester 2013, nitrate ground water concentrations detected in samples from the Qal/WBR HSU ranged from the <0.5 mg/L reporting limit in guard wells located near the site boundary to 160 mg/L in monitor well W-832-13 (February), located in the Building 832 source area. The

historic maximum concentration of nitrate detected in the Qal/WBR HSU occurred in SVI-830-033 (240 mg/L, 2008). This piezometer is located in the Building 830 source area where the maximum concentration detected during the first semester 2013 was 120 mg/L (monitor well W-830-34, February).

As discussed, during the first semester 2013, the maximum nitrate concentration detected in ground water in the $Tnsc_{1b}$ HSU was 160 mg/L (832-SRC monitor well W-832-13, February). Historically, extraction well W-830-49 has contained the highest nitrate concentrations in the $Tnsc_{1b}$ HSU (501 mg/L, 1998). This well is located in the Building 830 source area where the maximum nitrate concentration detected during the first semester 2013 was 140 mg/L (March). Nitrate concentrations in the $Tnsc_{1b}$ guard wells during the first semester 2013 ranged from <0.5 mg/L to 2.5 mg/L in well W-830-1730 (February), significantly below the 45 mg/L MCL cleanup standard.

During the first semester 2013, the maximum nitrate ground water concentration detected from the $Tnsc_{1a}$ HSU was 100 mg/L in 832-SRC extraction well W-832-25 (March). Historically, monitor well W-830-27 had the highest nitrate concentrations in the $Tnsc_{1a}$ HSU (160 mg/L, 2002). This well had a nitrate concentration of 95 mg/L during the first semester 2013.

During the first semester 2013, nitrate ground water concentrations detected in samples collected from the Upper $Tnbs_1$ ranged from <0.5 mg/L to 6.4 mg/L in monitor well W-830-28 (March). Historically, well W-830-28 has had the highest nitrate concentrations in the $UTnbs_1$ HSU (21 mg/L, 1997). Nitrate ground water concentrations were not detected above the 45 mg/L MCL cleanup standard in Upper $Tnbs_1$ HSU guard wells W-830-15 or W-832-2112 during the reporting period. The very low nitrate concentrations in the downgradient areas and the absence of detectable nitrate in the southern site boundary guard wells are consistent with the interpretation that nitrate is naturally attenuating *in situ*.

2.7.3.3. Building 832 Canyon OU Remediation Optimization Evaluation

During the first semester 2013, ground water and soil vapor extraction wellfield operations continued in the Building 832 Canyon OU to prevent offsite plume migration, reduce source area concentrations, and remove contaminant mass. The expanded 832-SRC and 830-SRC extraction wellfields have increased hydraulic capture, while preventing the downward migration of contaminants into deeper HSUs and/or laterally toward the site boundary and Site 300 water-supply wells, Well 18 and Well 20. Ground water yield from many 830-SRC and 832-SRC extraction wells continues to be low and hydraulic capture is difficult to assess in some areas because these wells cannot maintain continuous operation. The low yields are due to a combination of geologic materials with low hydraulic conductivity, dewatering, and limited recharge.

In the Qal/WBR and $Tnsc_{1b}$ HSUs, the extraction wellfield targets the highest VOC plume concentrations emanating from the Building 832 and Building 830 source areas, but steep terrain and unstable canyon bottom soil conditions limit the availability of sites for new wells. Ground water extraction is further constrained by limited recharge and declining water levels in both source areas. During the first semester 2013, some extraction wells were offline for part of the reporting period due to pump repairs, treatment facility repairs, and freeze protection. No long-term impact is expected as a result of these shutdowns.

Near the 832-SRC treatment facility, concentration trends in extraction wells have remained stable for several years as declining water levels and low yields limit ground water extraction. Soil vapor extraction accounts for most of the VOC mass extracted from this area. During the first semester 2013, 7.4 g of total VOC mass were removed by the 832-SRC GWTS and 11 g were removed by the 832-SRC SVTS. At the 830-SRC treatment facility, both ground water and soil vapor extraction play an important role in removing VOC mass. At the 830-SRC treatment facility, 690 g of total VOC mass were removed by the GWTS and 340 g were removed by the SVTS during the first semester 2013. The volume of ground water extracted from this facility was greater than first semester 2012 because of higher flow rates and more consistent uptimes in the Upper $Tnbs_1$ extraction wells during the first semester 2013. The volume of soil vapor extracted from this facility was less than the first semester 2012 because W-830-49 and W-830-1807 were both offline for part of the first semester 2013. At 830-DISS GWTS, 20 g of VOC mass were removed during the first semester 2013. In addition, totals of 162 kg of nitrate and 3.84 g of perchlorate were removed by the 832-SRC, 830-SRC and 830-DISS GTWSs.

Active remediation of the $Tnsc_{1a}$ HSU began in 2007 and the $Tnsc_{1a}$ extraction wellfield currently consists of two wells: W-830-2214, located near the 830-SRC treatment facility, and W-832-25, located downgradient of the 832-SRC treatment facility in the distal area of this plume. Since 2007, VOC ground water concentrations have remained stable in extraction well W-832-25, but increasing trends continue in extraction well W-830-2214. Water levels continue to decline in both the 830-SRC and 832-SRC areas, limiting continuous extraction from the $Tnsc_{1b}$ and $Tnsc_{1a}$ HSUs.

To increase hydraulic capture in the $Tnsc_{1a}$ HSU downgradient of extraction well W-830-2214, W-830-2701 was installed near Upper $Tnbs_1$ HSU extraction well W-830-60 in 2011. During the first semester 2013, VOC concentrations detected in this well reached a maximum concentration of 15 µg/L (April). The VOC detections at this well have been comprised of mainly TCE, but cis-1,2-DCE has also been detected at levels below its MCL cleanup standards. During the first semester 2013, perchlorate concentrations in W-830-2701 have been below the reporting limit of 4 µg/L and nitrate concentrations have been significantly below the 45 mg/L MCL cleanup standard. A step-drawdown hydraulic test was conducted at well W-830-2701 in April 2013. The 830-SRC is currently undergoing an engineering evaluation and upgrade to improve treatment facility performance and to connect $Tnsc_{1a}$ HSU extraction well W-830-2701.

During 2012, one new $Tnsc_{1a}$ HSU monitor well, W-830-2806, was installed west of well W-830-2701. This is a clean well and during the first semester 2013, no VOCs, perchlorate or nitrate have been detected.

Extraction wells in the Upper $Tnbs_1$ target areas with the highest total VOC concentrations. Since remediation began in this HSU, the overall extent of total VOCs has also decreased significantly and ground water samples collected from monitor well W-830-1832, which is located on the leading edge of the VOC plume, have been below the reporting limit since 2010. Ground water in Upper $Tnbs_1$ guard wells W-830-15 and W-832-2112, located downgradient of well W-830-1832 and upgradient of water-supply Well 20, continues to show analytical results below the respective reporting limits for all COCs and significantly below the 45 mg/L MCL cleanup standard for nitrate.

In the $Tnbs_2$ HSU, Building 832 Canyon remediation continues via extraction well W-830-2216. The source of contamination in this area is likely a combination of sources located in both the HEPA and the Building 832 Canyon area. Decreasing concentration trends in this extraction well and nearby monitor well W-830-13 suggest that remediation has been effective in removing mass in this area.

As remediation proceeds from the 832-SRC, 830-SRC and 830-DISS extraction wells, it is expected that concentrations in all Building 832 Canyon HSUs will continue to decline. Over the past year, the extent of the VOC plume in the Upper $Tnbs_1$ HSU has decreased slightly and this trend is expected to persist with continued pumping. VOC concentration trends in the Upper $Tnbs_1$ HSU continue to be monitored closely because pumping of water-supply Well 20 and backup water-supply Well 18 has the potential to influence the distribution of contaminants. After Site 300 begins using the Hetch-Hetchy reservoir as its main water supply, Well 20 will become a backup water-supply well and Well 18 will no longer be used.

2.7.3.4. Building 832 Canyon OU Remedy Performance Issues

No new issues were identified during this reporting period that could impact the long-term performance of the cleanup remedy for the Building 832 Canyon OU. The remedy continues to make progress toward cleanup and to be protective of human health and of the environment.

2.8. Site 300 Site-Wide OU 8

The Site 300 Site-Wide OU is comprised of release sites at which no significant impacts to ground water and no unacceptable risk to human health or the environment are present. For this reason, a monitoring-only interim remedy was selected for the release sites in the Site-Wide Record of Decision (U.S. DOE, 2008). The monitoring conducted during the reporting period for these release sites is discussed below.

2.8.1. Building 801 and Pit 8 Landfill

The Building 801 Firing Table was used for explosives testing until it was discontinued in 1998, and the firing table gravel and some underlying soil were removed. Waste fluid discharges to the Building 801 Dry Well from the late 1950s to 1984, resulted in VOC contamination of the soil and ground water. Debris from the firing table was buried in the nearby Pit 8 Landfill until 1974. A map of the Building 801 and Pit 8 Landfill area showing the locations of the building, firing table, landfill, and monitor wells is presented on Figure 2.8-1.

2.8.1.1. Building 801 and Pit 8 Landfill Ground Water Monitoring

Wells K8-01, -02B, -03B, -04, and -05 monitor Building 801 ground water contaminants that were released from the Building 801 dry well. Wells K8-02B, K8-04, and K8-05 are also used as monitor wells to detect any releases from the Pit 8 Landfill. Detection monitoring of this landfill, which is discussed in Section 3.2, is conducted to determine if releases have occurred.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-1. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were not performed because well K8-05 was dry and eleven required analyses were not performed due to

an inoperable pump in well K8-02B during the first and second quarters. The pump in well K8-02B was replaced in June 2013.

2.8.1.2. Building 801 and Pit 8 Landfill Contaminant Concentrations and Distribution

At Building 801, the VOCs comprised of chloroform, 1,2-DCA and TCE are the primary COCs detected in ground water; perchlorate and nitrate are the secondary COCs. There are no COCs in ground water at the Pit 8 Landfill. The results of the detection monitoring of the Pit 8 Landfill are discussed in Section 3.2.

In the Building 801/Pit 8 Landfill area, five monitor wells are screened in the $Tnbs_1/Tnbs_0$ HSU.

During the first semester 2013, the maximum total VOC concentration detected in $Tnbs_1/Tnbs_0$ HSU ground water was 5.5 µg/L (monitor well K8-01, May). Well K8-01 is downgradient of the Building 801 dry well VOC release site and upgradient/cross-gradient of Pit 8. This detection of VOCs (measured in a duplicate sample) was comprised of 3.6 µg/L TCE and 1.9 µg/L 1,2-DCA; the routine sample (from the same well) had 3.4 µg/L TCE and 1.7 µg/L 1,2-DCA. Of these COCs, only 1,2-DCA was detected above its MCL cleanup standard of 0.5 µg/L during 2012. However, the first semester 2013 maximum 1,2-DCA concentration of 1.9 µg/L represents a decrease from the historic maximum 1,2-DCA concentration of 5 µg/L detected in this well in 1990. TCE was not detected above its 5 µg/L MCL cleanup standard and chloroform was not detected in any wells above its 0.5 µg/L reporting limit. Overall, VOC concentrations detected in ground water samples collected from wells downgradient of Building 801 have decreased from a historic maximum of 10 µg/L (well K8-01, 1990).

During the first semester 2013, perchlorate was not detected above its 4 µg/L reporting limit in ground water samples from any Building 801/Pit 8 monitor wells.

Nitrate concentrations in ground water in the vicinity of Building 801/Pit 8 Landfill have been relatively stable over time. The first semester 2013 maximum nitrate concentration was 67 mg/L (duplicate sample from monitor well K8-04, May) that statistically represents the historic maximum concentration detected in the area; however, the routine sample collected the same day from this well contained 63 mg/L. Both concentrations are within the range of 53 to 67 mg/L detected in this well since 2004. This detection in well K8-04 and a detection of 47 mg/L in monitor well K8-01 (duplicate sample, May; the routine sample collected the same day contained 43 mg/L) were the only detections in area wells that exceeded the 45 mg/L MCL cleanup standard for nitrate. The historic maximum nitrate detection in well K8-01 is 64 mg/L (2002). Nitrate concentrations detected in ground water during the first semester 2013 at the Building 801/Pit 8 Landfill are generally similar to previous years.

Nitrate and 1,2-DCA are the only COCs remaining above their cleanup standards at Building 801.

2.8.2. Building 833

TCE was used as a heat-exchange fluid at Building 833 from 1959 to 1982 and was released through spills and rinse water disposal, resulting in TCE-contamination of soil and shallow perched ground water. A map showing the locations of the building and monitor wells is presented on Figure 2.8-2.

2.8.2.1. Building 833 Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-2. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; ten required analyses eight wells were not performed because the wells were dry or there was insufficient water in the wells to collect the samples.

2.8.2.2. Building 833 Contaminant Concentrations and Distribution

At Building 833, the VOCs TCE and cis-1,2-DCE are the primary COCs in ground water; there are no secondary COCs.

The Tpsg HSU is a shallow, highly ephemeral, perched water-bearing zone. During heavy rainfall events, this HSU may become saturated, but quarterly monitoring of the wells from 1993 to present has shown little evidence of saturation. When saturated, monitoring conducted since 1993 has shown a decline in VOC concentrations in Tpsg HSU ground water.

In the Building 833 area, nine monitor wells are screened in the Tpsg HSU and one well (W-833-30) is screened in the deeper Lower $Tnbs_1$ HSU.

The historic maximum concentration of VOCs measured in the Tpsg HSU in the Building 833 area is 2,100 µg/L (entirely TCE) detected in monitor well W-833-03 in 1992. This well has not been sampled due to insufficient water since June 2000, when 20 µg/L of VOCs (entirely TCE), was detected. During the first semester 2013, the only Tpsg HSU well with sufficient ground water to retain a sample was W-833-33 that yielded a sample with 110 µg/L of VOCs (entirely TCE, March). In 2012, this well yielded a sample with 120 µg/L of VOCs (entirely TCE). The historic maximum VOC concentration detected in well W-833-33 is 170 µg/L (entirely TCE) in 2008. During the first semester 2013, the remaining seven wells screened in the Tpsg HSU were either dry or did not contain enough water to collect a sample.

The other primary COC, cis-1,2-DCE, was not detected in any Building 833 area wells, during the first semester 2013. This compound has only been detected five times and most recently in 1993, all in well W-833-12. The historic maximum cis-1,2-DCE concentration was 58 µg/L, detected in 1993. This compound has not been detected in other Building 833 area wells, historically.

During the first semester 2013, VOCs were not detected in either routine or duplicate ground water samples collected in March from monitor well W-833-30, screened in the deeper Lower $Tnbs_1$ HSU, indicating that VOC contamination continues to be confined to the shallow Tpsg perched water-bearing zone.

TCE in Tpsg HSU ground water is the only COC remaining above its cleanup standard (5 µg/L) at Building 833.

2.8.3. Building 845 Firing Table and Pit 9 Landfill

The Building 845 Firing Table was used from 1958 until 1963 to conduct explosives experiments. Leaching from Building 845 Firing Table debris resulted in minor contamination of subsurface soil with depleted uranium and HMX detected in samples collected from boreholes

drilled in 1989. A map showing the locations of the building, landfill, and monitor wells are presented on Figure 2.8-3.

2.8.3.1. Building 845 and Pit 9 Landfill Ground Water Monitoring

No ground water COCs were identified for the Building 845/Pit 9 Landfill area. Wells K9-01 through K9-04 monitor ground water in the Building 845 and Pit 9 Landfill area to:

- Detect any future releases from the Pit 9 Landfill, and
- Detect any impacts to ground water from HMX and uranium in subsurface soil and rock.

These monitor wells are screened in the lower Neroly Formation $Tnsc_0$ HSU. Detection monitoring of the Pit 9 Landfill is discussed in Section 3.3.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-3. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; eight required analyses were not performed due to an inoperable pump in well K9-04 during second quarter. The pump in K9-04 was replaced in June 2013.

2.8.3.2. Building 845 and Pit 9 Landfill Contaminant Concentrations and Distribution

In the Building 845 and Pit 9 Landfill area, four landfill detection monitor wells are screened in the $Tnbs_1/Tnbs_0$ HSU.

There are no ground water COCs at the Building 845 and the Pit 9 Landfill. The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during the first semester 2013 were either below reporting limits or within the range of background concentrations. Because uranium and the HE compound HMX were identified as COCs in subsurface soil at Building 845/Pit 9 Landfill, ground water in this area is monitored for these constituents.

During the first semester 2013, HMX concentrations in ground water samples remained below the 1 µg/L reporting limit. Historically, HMX has not been detected above reporting limit since the four area monitor wells were installed in 1989.

During the first semester 2013, uranium activities in ground water samples remained very low (<1 pCi/L) and $^{235}U/^{238}U$ atom ratios indicate the presence of only natural uranium. The results of the detection monitoring of the Pit 9 Landfill are discussed in Section 3.2.

These data continue to indicate that there have been no releases from the Pit 9 Landfill nor impacts to ground water from HMX and uranium in subsurface soil.

2.8.4. Building 851 Firing Table

The Building 851 Firing Table has been used since 1962 to conduct explosives experiments. A map depicting the locations of the firing table and monitor wells is presented on Figure 2.8-4.

2.8.4.1. Building 851 Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-4. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements.

2.8.4.2. Building 851 Contaminant Concentrations and Distribution

In the Building 851 Firing Table area, four monitor wells are screened in the Tmss HSU.

At the Building 851 Firing Table, uranium is the primary and only COC detected in ground water; there are no secondary COCs.

Uranium activities in Tmss HSU ground water in the Building 851 Firing Table area have always been well below the 20 pCi/L MCL cleanup standard for total uranium and within the range of background levels. Although background uranium activity at Site 300 may vary based on ground water age, major-ion chemistry, and aquifer lithology, single-digit uranium activities are clearly within the range of Site 300 background. However, ground water continues to be monitored to detect any impacts to ground water from uranium in subsurface soil and rock.

During the first semester 2013, the maximum total uranium activity detected in ground water samples collected in June from wells in the Building 851 area was 1.5 pCi/L in well W-851-08; the historic maximum uranium activity in this well was 2.06 pCi/L observed in 1993. June samples from the three remaining wells contained uranium activities at 0.12 pCi/L in well W-851-06, and below the reporting limit of <0.0627 in wells W-851-05 and W-851-07. The historic maximum uranium activity in Tmss HSU ground water at Building 851 is 3.2 pCi/L (well W-851-07, 1991); as mentioned previously, the first semester 2013 activity for this well was below the reporting limit.

During the first semester 2013, the atom ratio of $^{235}U/^{238}U$ indicated the presence of only natural uranium in the samples from wells W-851-07 (0.0074) and W-851-08 (0.0072). Due to the low mass of ^{235}U in the sample (less than reporting limit) for wells W-851-05 and W-851-06, the reporting limit was used as the numerator in the $^{235}U/^{238}U$ ratio calculation, resulting in an atom ratio (which is not quantifiable) that includes the range of atom ratios including that of enriched uranium. In reality, the uranium is wholly natural in these samples. Overall, uranium activities in ground water are similar to previous years and remain well below the 20 pCi/L MCL cleanup standard and within the range of natural background levels.

3. Detection Monitoring, Inspection, and Maintenance Program for the Pits 2, 3, 4, 5, 6, 7, 8, and 9 Landfills and Inspection and Maintenance Program for the Drainage Diversion System and Building 850 CAMU

The Detection Monitoring Program is designed to detect any future releases of contaminants from the Pit 2, 3, 4, 5, 6, 7, 8, and 9 Landfills. This section presents the results for ground water detection monitoring of these landfills, and any landfill inspections or maintenance conducted during the reporting period. This section also includes any inspection and maintenance activities

conducted for the Pit 7 Drainage Diversion System and Building 850 CAMU during the reporting period.

3.1. Pit 2 Landfill

The Pit 2 Landfill was used from 1956 until 1960 to dispose of firing table debris from Buildings 801 and 802. Ground water data indicate that a past discharge of potable water to support a red-legged frog habitat located upgradient from the landfill may have leached depleted uranium from the buried waste. The frogs were relocated and the water discharge was discontinued, thereby removing the leaching mechanism. No contaminants were identified in surface or subsurface soil at the Pit 2 Landfill. No risk to human or ecological receptors has been identified at the Pit 2 Landfill.

3.1.1. Sampling and Analysis Plan Modifications

Detection monitoring of detection monitor wells located downgradient of the Pit 2 Landfill, is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride. Detection monitoring wells for the Pit 2 Landfill include W-PIT2-1934, W-PIT2-1935, K2-01C, and NC2-08.

The sampling and analysis plan for the Pit 2 Landfill ground water Detection Monitoring Program is presented in Table 3.1-1.

During the reporting period ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exception; sixteen required analyses were not performed because the wells were dry or there was insufficient water in the wells to collect the samples and nine required analyses were not performed due to an inoperable pump in K2-01C during second quarter. The pump replacement for well K2-01C is being scheduled.

3.1.2. Contaminant Detection Monitoring Results

A map showing the locations of monitor wells and the Pit 2 Landfill is presented on Figure 2.5-1. Depth to ground water within the $Tnbs_1/Tnbs_0$ HSU beneath the Pit 2 Landfill currently ranges from over 50 feet to over 70 feet.

The maximum first semester 2013 tritium activity within the $Tnbs_1/Tnbs_0$ HSU in the area immediately south of the Pit 2 Landfill was 3,330 ± 678 pCi/L (monitor well NC2-08, May). The maximum 2012 tritium activity of 3,520 pCi/L was also detected in a sample from well NC2-08. The historic maximum tritium activity of 49,100 pCi/L was detected in 1986 samples (January and August) from monitor well K2-01C. Due to an inoperable pump, well K2-01C was not sampled during the first semester of 2013. Monitor wells W-PIT2-2301 and W-PIT2-2302, screened in the Qal/WBR HSU and located downgradient from Pit 2 Landfill, contained insufficient water for sampling during the first semester of 2013. The 2012 samples from these wells did not contain tritium above the reporting limit/background activity (100 pCi/L). These data indicate that tritium activities in $Tnbs_1/Tnbs_0$ HSU ground water immediately downgradient of the landfill are decreasing and are currently a fraction of the historic maximum.

The maximum first semester 2013 uranium activity detected in a ground water sample from the Pit 2 area was 3.9 pCi/L (monitor well W-PIT2-1934, May). The uranium activities in the ground water samples collected from the Pit 2 detection monitor wells are all within the range of natural uranium background. Prior to 2005, potable water was discharged near to maintain a

wetland habitat for red-legged frogs (a Federally-listed endangered species) within a drainage channel that extends along the northern and eastern margin of the Pit 2 Landfill. While this discharge occurred, increased uranium concentrations in wells in the Pit 2 area were observed. The release of depleted uranium from Pit 2 may have occurred during this time period as a result of this discharge. This discharge was discontinued in 2005. Since the discharge was discontinued, total uranium activities in ground water from $Tnbs_1$/$Tnbs_0$ HSU monitor wells W-PIT2-1934 and W-PIT2-1935, both located along the northern margin of the Pit 2 Landfill, have decreased. The samples collected from wells W-PIT2-1934 (above) and W-PIT2-1935 during first semester 2013 and analyzed by mass spectrometry contained 3.9 pCi/L and 2.7 pCi/L of uranium, respectively (May). The sample from well W-PIT2-1934 contained a small percentage of depleted uranium while the sample from well W-PIT2-1935 contained only natural uranium. Monitor wells W-PIT2-2301 and W-PIT2-2302, screened in the Qal/WBR HSU and located downgradient from Pit 2 Landfill, contained insufficient water for sampling during the first semester of 2013. During 2012, ground water samples collected from these wells contained low activities of total uranium (0.69 pCi/L and 0.14 pCi/L, respectively).

During first semester 2013, perchlorate was not detected above the 4 µg/L reporting limit in ground water samples from any of the Pit 2 detection monitoring wells. The other detection monitoring constituents: VOCs, nitrate, HE compounds, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during first semester 2013 were either below reporting limits or within the range of background concentrations.

There was no evidence of new contaminant releases from the Pit 2 Landfill indicated by the first semester 2013 ground water detection monitoring data.

3.1.3. Landfill Inspection Results

The Pit 2 Landfill was inspected on April 10, 2013. No problems were identified.

3.1.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during the second semester of 2013.

3.1.5. Maintenance

No maintenance was necessary or conducted on Pit 2 during the first semester of 2013.

3.2. Pit 6 Landfill

The Pit 6 Landfill was used from 1964 to 1973 to bury waste in nine unlined debris trenches and animal pits, including shop and laboratory equipment and biomedical waste. The Pit 6 Landfill was capped and closed in 1997 to prevent further leaching of contaminants that likely resulted from percolation of rainwater through the buried waste. Detection monitoring of the Pit 6 Landfill is conducted to identify any future releases to ground water in accordance with the requirements of the Pit 6 Post-Closure Plan.

3.2.1. Sampling and Analysis Plan Modifications

Detection monitoring of detection monitor wells located downgradient of the Pit 6 Landfill (EP6-06, EP6-08, EP6-09, K6-01S, K6-19, and K6-36), is conducted semi-annually for VOCs

and tritium and annually for aromatic VOCs (benzene, toluene, ethylbenzene, and xylenes); beryllium, mercury, total uranium, gross alpha/beta, perchlorate, and nitrate.

The sampling and analysis plan for the Pit 6 Landfill ground water Detection Monitoring Program is presented in Table 2.3-1.

During the reporting period ground water monitoring was conducted in accordance with the detection monitoring requirements with the following exceptions: eighteen required analyses were not performed because wells EP6-08 and K6-36 were dry.

3.2.2. Contaminant Detection Monitoring Results

A map showing the locations of monitor wells at the Pit 6 Landfill is presented on Figure 2.3-1. First semester 2013 analytical results are summarized in Table 2.3-2 and physical parameters measured during sampling are included in Table 2.3-3. There was no evidence of a new contaminant release from the Pit 6 Landfill as indicated by the first semester 2013 ground water detection monitoring data.

Data collected during the first semester 2013 do not differ significantly from the previous quarter. Wells K6-36 and EP6-08 were dry and not sampled this semester.

Tritium and VOCs that were released to ground water from the landfill prior to its closure in 1998 continue to be detected. Tritium activities continued to exceed its reporting limit of 100 pCi/L in ground water samples from one downgradient detection monitor well (K6-19) during the first semester 2013 from a routine sample (271 pCi/L, January). Tritium activities in this well were higher than the activities reported in the previous sample (173 pCi/L, July 2012), but were consistent with the range of recent tritium activities detected in this well in the past few years and are not considered as indicative of a new release. Historically, tritium activities in well K6-19 have dropped since October 1999 from the maximum of 2,520 pCi/L. Since then, tritium activities have generally decreased (Campbell, 2007; Blake et al., 2011) and have always been well below the 20,000 pCi/L MCL. Tritium activities in the other Pit 6 detection monitoring wells were below the reporting limit, during the first semester 2013.

During the first semester 2013, the only VOC detected in Pit 6 detection monitor wells above the MCL cleanup level was TCE at 5.8 µg/L in well EP6-09 (January), slightly above the MCL cleanup level of 5 µg/L. A previous sample collected from EP6-09 yielded 5.9 µg/L TCE (July 2012). Other than this detection of TCE, VOCs including TCE were not detected at concentrations greater than their MCL cleanup levels in Pit 6 detection monitor wells during the first semester of 2013. The historic maximum of TCE detection in Pit 6 monitor wells was 250 µg/L (K6-19, 1988) that has declined to 2.9 µg/L (January). Further discussion of VOC distribution is presented in Section 2.3.2.1.1 of this CMR report. The other detection monitoring constituents: (aromatic VOCs, beryllium, mercury, total uranium, gross alpha/beta, perchlorate and nitrate) in samples collected from the detection monitor wells during first semester 2013 were either below reporting limits, or below their respective MCLs.

3.2.3. Landfill Inspection Results

The Pit 6 Landfill Annual Engineering Inspection was conducted during the first semester of 2013 by Abri Engineering. Inspection results were summarized in an Abri Engineering May 2013 Engineering Inspection Report. No problems were reported.

3.2.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring inspection will be conducted during the second semester of 2013.

3.2.5. Maintenance

A post-closure visual maintenance inspection was performed during the first semester of 2013 by LLNL staff. With the exception of only a few minor maintenance procedures such as removing vegetation from the drainage system, this inspection demonstrated the continued functional and structural integrity of the cap, vegetative cover, and drainage system.

3.3. Pit 8 Landfill

Pit 8 Landfill received debris from the Building 801 Firing Table until 1974, when it was covered with compacted soil. There is no evidence of contaminant releases from the landfill.

3.3.1. Sampling and Analysis Plan Modifications

Detection monitoring of detection monitor wells located downgradient of the Pit 8 Landfill, is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride. Detection monitoring wells for the Pit 8 Landfill include downgradient wells K8-02B, K8-04, and K8-05. Data from wells K8-01 and K8-03B that are located upgradient from the Pit 8 Landfill and downgradient of the Building 801 release site are also used for comparative purposes.

The sampling and analysis plan for the Pit 8 Landfill ground water Detection Monitoring Program is presented in Table 2.8-1.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were not performed because well K8-05 was dry and eleven required analyses were not performed due to an inoperable pump in well K8-02B during the first and second quarters. The pump in well K8-02B was replaced in June 2013.

3.3.2. Contaminant Detection Monitoring Results

A map of the Building 801 and Pit 8 Landfill area showing the locations of the building, firing table, landfill, and monitor wells is presented as Figure 2.8-1.

Historic and current data indicate that VOCs detected in ground water in the Pit 8 Landfill area are the result of releases from the former Building 801D dry well, which have migrated downgradient from Building 801 to the area beneath the landfill. First semester 2013 ground water samples collected from monitor wells K8-01 and K8-04 contained concentrations of 1,2 DCA that exceeded the 0.5 µg/L MCL cleanup standard. The highest concentration (5.5 µg/L) of VOCs, comprised of 3.6 µg/L of TCE and 1.9 µg/L of 1,2-DCA, during first semester 2013 continues to be observed at monitor well K8-01, located immediately upgradient of Pit 8 and downgradient of Building 801. The presence of VOCs (2.39 µg/L), comprised of 1.5 µg/L of TCE and 0.89 µg/L of 1,2-DCA, in ground water samples from monitor well K8-04, immediately downgradient of the Pit 8 Landfill appears to be a continuation of the VOC plume originating at the Building 801 dry well and not indicative of a release from the Pit 8 Landfill.

The maximum first semester 2013 nitrate concentration detected in a ground water sample from a well in the Pit 8 Landfill area was 67 mg/L in the duplicate sample collected from monitor well K8-04 in May. During first semester 2013 nitrate concentrations in ground water samples from monitor wells K8-01 and K8-04 exceeded the 45 mg/L cleanup standard for nitrate. Nitrate concentrations in samples from well K8-01 were 43 mg/L and 47 mg/L for routine and duplicate samples, respectively; well K8-04 nitrate concentrations were 63 mg/L and 67 mg/L for routine and duplicate samples, respectively.

Tritium activities in all samples collected from wells in the Pit 8 Landfill area during first semester 2013 were below the reporting limit (<100 pCi/L), except for the duplicate sample from monitor well K8-01 (104 ± 70 pCi/L). These activities are all within the range of background.

The other detection monitoring constituents: perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during first semester 2013 from wells upgradient/cross-gradient and downgradient of the Pit 8 Landfill were either below reporting limits or within the range of background concentrations.

Of the constituents monitored during first semester 2013 as part of the Detection Monitoring Program in $Tnbs_1/Tnbs_0$ HSU ground water from Pit 8 Landfill area wells, only 1,2-DCA and nitrate exceeded applicable cleanup standards.

There was no evidence of a new contaminant release from the Pit 8 Landfill indicated by the first semester 2013 ground water detection monitoring data.

3.3.3. Landfill Inspection Results

The Pit 8 Landfill was inspected on April 10, 2013. No problems were reported.

3.3.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during the second semester of 2013.

3.3.5. Maintenance

No maintenance was necessary or conducted at Pit 8 during the first semester of 2013.

3.4. Pit 9 Landfill

Debris generated at the Building 845 Firing Table was buried in the Pit 9 Landfill from 1958 until 1963. There has been no evidence of contaminant releases from the Pit 9 Landfill.

3.4.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted in wells located downgradient of the Pit 9 Landfill, annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride. Detection monitoring wells for the Pit 9 Landfill include K9-01, K9-02, K9-03, and K9-04.

The sampling and analysis plan for the Pit 9 Landfill ground water Detection Monitoring Program is presented in Table 2.8-3.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; eight required analyses were not

performed due to an inoperable pump in well K9-04 during second quarter. The pump in K9-04 was replaced in June 2013.

3.4.2. Contaminant Detection Monitoring Results

A map showing the locations of the building, landfill, and monitoring wells is presented on Figure 2.8-3. The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during first semester 2013 were either below reporting limits or within the range of background concentrations. There was no evidence of a new release from the Pit 9 Landfill during first semester 2013.

3.4.3. Landfill Inspection Results

The Pit 9 Landfill was inspected on April 10, 2013. No problems were reported.

3.4.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during the second semester of 2013.

3.4.5. Maintenance

No maintenance was conducted at Pit 9 during the first semester of 2013.

3.5. Pit 7 Complex Landfills

The Pit 3, 4, 5, and 7 Landfills are collectively designated the Pit 7 Landfill Complex. Firing table debris containing tritium, depleted uranium, and metals was placed in the pits in the 1950s through the 1980s. The Pit 4 and 7 Landfills, and about 25-30% of Pit 3, were capped in 1992. During years of above-normal rainfall (i.e., 1997-1998 El Niño), ground water rose into the bottom of the landfills and the underlying contaminated bedrock. This resulted in the release of tritium, uranium, VOCs, perchlorate, and nitrate to ground water. In addition to these COCs, ground water samples from Pit 7 Complex detection monitor wells are also analyzed for metals, HE compounds, and PCBs as these constituents may have been contained in the firing table gravels placed in the landfills.

3.5.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted in wells located downgradient of the Pit 7 Landfill Complex annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, fluoride, and PCBs.

The sampling and analysis plan for the Pit 7 Complex Landfill ground water Detection Monitoring Program is presented in Table 2.5-8.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements.

3.5.2. Contaminant Detection Monitoring Results

A map showing the locations of detection monitor wells and the Pit 7 Complex Landfill is presented on Figure 2.5-1. Wells K7-01, K7-03, K7-06, K7-09, K7-10, NC7-26, NC7-47 and NC7-48 comprise the current detection monitoring well network for the Pit 7 Complex. Wells

K7-01, K7-03 and NC7-26 are located downgradient of Pit 5 and Pit 7; well K7-06 is upgradient of Pit 7, wells K7-09 and K7-10 are cross-gradient of Pits 3, 5, and 7; well NC7-48 is immediately downgradient of Pit 7, and well NC7-47 is far downgradient of Pits 3 and 7.

The detection monitor wells are screened in the following HSUs:

- NC7-48: Qal/WBR HSU.
- K7-01 and K7-06: Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs.
- K7-03, K7-10, NC7-26 and NC7-47: $Tnbs_1/Tnbs_0$ HSU.
- K7-09: $Tnsc_0$ HSU.

Ground water extraction and treatment at the PIT7-SRC facility began in March 2010. Pumping on the extraction wells proximal to Pits 3 and 5 has an impact on the distribution and magnitudes of COC concentrations observed.

Depth to ground water is currently a minimum of 10 to 15 feet below the buried waste in Landfill Pits 3, 4, 5 and 7.

3.5.2.1. Tritium

The Pit 3 and 5 Landfills have been identified as the sources of previous releases of tritium to ground water. The Pit 7 Landfill is not an apparent source of tritium in ground water as most of the tritium-bearing experiments conducted at Site 300 occurred prior to its opening in 1979 (Taffet et al., 2008).

The highest tritium activity detected in a first semester 2013 ground water sample from a Pit 7 Complex detection monitor well was 62,200 pCi/L (April) in $Tnbs_1/Tnbs_0$ HSU well K7-03. Tritium activities in ground water samples from this well have generally been declining since the historic maximum activity 216,000 pCi/L in March 1993. The maximum 2012 ground water tritium activity in a sample from this well was 70,200 pCi/L (April).

Tritium activities in ground water samples from detection monitor well K7-01 have decreased from the historic maximum activity of 72,900 pCi/L in October 1999 to a first semester 2013 maximum activity of 32,800 pCi/L detected in the duplicate June sample from this well. The tritium activity detected in the routine June sample was 28,900 pCi/L. Last year, a maximum tritium activity of 32,100 pCi/L was detected in the October 2012 sample from this well.

Tritium activities in samples from detection monitor well NC7-26 have decreased from the historic maximum activity of 30,000 pCi/L (May 1999) to a first semester 2013 maximum activity of 1,730 pCi/L (April). The 2013 result is an increase over the 2012 maximum tritium activity of 740 pCi/L. However, during 2011, the maximum tritium activity in a sample from this well was 1,800 pCi/L.

Tritium activities in all samples collected during first semester 2013 from upgradient well K7-06, cross-gradient wells K7-09 and K7-10, downgradient well NC7-48, and far downgradient well NC7-47 were all below the 100 pCi/L reporting limit/background activity.

In general, the extent of tritium in the $Tnbs_1/Tnbs_0$ and Qal/WBR HSUs in the Pit 7 Complex area are consistent with those observed in 2012, and tritium activities continue to decrease. No new release of tritium from the landfills is indicated by the first semester 2013 ground water tritium data.

A discussion of tritium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.1.

3.5.2.2. Uranium

Depleted uranium was previously released to ground water from sources in Pits 3, 5 and 7 (Taffet et al., 2008). Uranium activities were below the 20 pCi/L MCL cleanup standard in all detection monitor well samples collected during first semester 2013. The maximum uranium activity in a first semester 2013 sample from a detection monitor well was 16 pCi/L (June) from well K7-01. Uranium activities in ground water samples from this well have generally fluctuated within a few pCi/L of the 20 pCi/L MCL cleanup standard since the 1997-1998 El Niño and $^{235}U/^{238}U$ isotopic ratios have indicated added depleted uranium. The historic maximum uranium activity detected in a sample from this well was 27 pCi/L (September 1984).

The next highest uranium activity in a first semester 2013 detection monitor well sample was 6.9 pCi/L in the April 2013 sample from well NC7-48. Uranium activities in samples from this well have declined from the historic maximum of 104.9 pCi/L detected in this well after the 1997-98 El Niño (March 1998). Ground water samples from this well have historically contained depleted uranium.

The extent of uranium in Qal/WBR and $Tnbs_1/Tnbs_0$ ground water is similar to recent years and uranium activities in samples from all detection monitor wells have generally decreased from their historic maximum uranium activities. Ground water uranium data from first semester 2013 do not indicate any new releases of uranium from the Pit 7 Complex Landfills. A discussion of uranium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.2.

3.5.2.3. Nitrate

First semester 2013 ground water samples from Pit 7 Complex detection monitor wells NC7-47 and K7-01 contained nitrate at concentrations of 64 mg/L and 46 mg/L, respectively, exceeding the 45 mg/L MCL cleanup standard. The nitrate concentration measured in the duplicate sample from well K7-01 was 41 mg/L. Ground water samples from well NC7-47 have never contained any other COCs in excess of background concentrations. Overall, nitrate concentrations in the detection monitoring wells have remained stable, with occasional fluctuations, for the last decade. Current data do not indicate any new releases of nitrate from any of the landfills. A discussion of nitrate that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.3.

3.5.2.4. Perchlorate

Wells K7-01 (screened in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs) and K7-03 (screened in the $Tnbs_1/Tnbs_0$ HSU) are the only detection monitor wells from which ground water samples have historically contained perchlorate at concentrations in excess of the 4 µg/L reporting limit. Perchlorate concentrations in samples from these wells have decreased from the historic maximum of 25 µg/L at well K7-01 (July 2006) and 29 µg/L at well K7-03 (April 2005) to 9.9 µg/L and 7.6 µg/L of perchlorate, respectively, during first semester 2013. The overall extent of perchlorate in ground water in the Pit 7 Complex area did not change significantly from 2012 to present. The first semester 2013 data do not indicate any new releases of perchlorate

from any of the landfills. A discussion of perchlorate that was previously released to ground water from the Pit 7 Complex landfills is presented in Section 2.5.5.2.4.

3.5.2.5. Volatile Organic Compounds

During the first semester of 2013, VOCs were detected in samples from two detection monitor wells at concentrations above reporting limits. These samples from wells K7-01 (June) and K7-03 (April) contained 1.0 µg/L and 0.94 µg/L of TCE, respectively. The historic maximum VOC concentrations in samples from these wells were 20 µg/L (well K7-01, May 1985) and 15.2 µg/L (well K7-03, July 1985). VOC concentrations have generally been declining in samples from these wells since the times of those maxima. The overall extent of VOCs in ground water in the Pit 7 Complex area did not change significantly from 2012 to present. The first semester 2013 data do not indicate any new releases of VOCs from any of the landfills. A discussion of VOCs that were previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.5.

3.5.2.6. Title 26 Metals and Lithium

During first semester 2013, Title 26 metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc) and lithium were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of background concentrations. These data did not indicate a release of metals during the semester from any of the landfills.

3.5.2.7. High Explosives (HE) Compounds

During the first semester of 2013, HE compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of individual compound detection limits of 1 to 2 µg/L. These data did not indicate a release of HE compounds during the semester from any of the landfills.

3.5.2.8. Polychlorinated Biphenyls (PCBs)

During the first semester of 2013, PCB compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of individual compound detection limits of approximately 0.5 µg/L. These data do not indicate a release of PCBs during the year from any of the landfills.

3.5.3. Landfill Inspection Results

The Pit 7 landfill cap engineering inspection was conducted on April 10, 2013. The landfill cap was found to be in good condition and no maintenance issues were observed. The Pit 3 and 5 Landfill covers were not inspected during the first semester 2013.

3.5.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring of the Pit 7 landfill was conducted during the second semester of 2012. No evidence of subsidence was observed. The next annual subsidence monitoring will be conducted during the second semester of 2013.

3.5.5. Maintenance

Maintenance was not performed on any of the pit covers during the first semester of 2013.

3.6. Pit 7 Complex Drainage Diversion System

A Drainage Diversion System was constructed in the Pit 7 Complex area of OU 5 in 2007-2008 (Section 2.6). The Pit 7 Drainage Diversion System is inspected and maintained per the requirements of the Inspection and Maintenance Plan (Taffet et al., 2008).

3.6.1. Drainage Diversion System Inspection Results

Monthly rainy season inspections were performed during first semester 2013. The drainage diversion system was inspected on January 14, February 14, March 14, and April 2 (post-season). Sediment and vegetative debris accumulations were noted.

3.6.2. Drainage Diversion System Maintenance

Vegetative debris was removed from the settling basin and mouths of pipes in the southern settling basin area during the first semester of 2013.

3.7. Building 850 CAMU

A CAMU was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action (Section 2.5). The Building 850 CAMU is inspected and maintained per the requirements of the Inspection and Maintenance Plan (SCS Engineers, 2010).

3.7.1. Building 850 CAMU Inspection Results

The CAMU was not inspected during the first semester of 2013. CAMU inspections are typically conducted during the second semester in July (post-season) and October (pre-season). The results of these inspections will be documented in the annual Compliance Monitoring Report.

3.7.2. Building 850 CAMU Maintenance

Maintenance was not required during the first semester of 2013.

4. Risk and Hazard Management Program

The goal of the Site 300 Risk and Hazard Management Program is to protect human health and the environment by controlling exposure to contaminants during remediation. Risk and hazard management is conducted in areas of Site 300 where the exposure point risk exceeded 1×10^{-6} or the hazard index exceeded 1 in the baseline risk assessment. Institutional controls have been implemented to manage risks. The CMP/CP requires that the institution controls in place at Site 300 be evaluated annually. The completed Institutional Controls Monitoring Checklist for 2012 will be included in the Annual CMR.

4.1. Human Health Risk and Hazard Management

The CMP/CP requires that the risk and hazard associated with volatile contaminants in the subsurface migrating upward into indoor and outdoor ambient air and being inhaled by workers be re-evaluated annually using current data, where the risk exceeds 10^{-6} and the hazard indices exceeds 1.

The onsite worker inhalation risk associated with vapor intrusion from the subsurface into indoor and outdoor air is discussed in Section 4.1.1. The onsite worker inhalation risk associated with springs is discussed in Section 4.1.2.

4.1.1. Annual Inhalation Risk Evaluation

The CMP (Dibley et al., 2009a) requires that the risk and hazard associated with volatile contaminants in the subsurface migrating upward into indoor and outdoor ambient air and being inhaled by workers be re-evaluated annually using current data. The following risk evaluations were performed during 2012:

- Indoor Ambient Air in Building 834D
- Indoor Ambient Air in Building 830

The estimated risk in 2012 remained above 10^{-6} and/or the hazard quotient remained above 1 for the indoor ambient air exposure pathway evaluated at Building 834D and Building 830. The building occupancy restrictions, engineered controls, monitoring, and annual risk evaluations will continue for Buildings 834D and 830 in accordance with the CMP/CP. The 2013 risk evaluations for these buildings will be performed and reported in the Annual CMR. Active remediation using ground water and soil vapor extraction continues at both locations.

4.1.2. Spring Ambient Air Inhalation Risk Evaluation

4.1.2.1. VOC-Contaminated Springs

The CMP requires annual sampling of outdoor air above VOC-contaminated surface water, when surface water is present to determine VOC concentrations.

An unacceptable risk or hazard was identified during the baseline risk assessment (Webster-Scholten, 1994) for the inhalation of VOCs at four locations:

1. Spring 3 (Building 832 Canyon OU) – Cumulative risk 7×10^{-5}, hazard index 2.3 due to TCE and PCE.
2. Spring 5 (HEPA OU) – Cumulative risk 1×10^{-5}, due to 1,1-DCE and TCE.
3. Spring 7 (Pit 6 Landfill OU) – Cumulative risk 4×10^{-5}, hazard index 1.5 due to TCE, PCE 1,2-DCA, and chloroform.
4. The Carnegie State Vehicular Recreation Area pond (offsite, east of the Pit 6 Landfill) – Cumulative risk 3×10^{-6} (hypothetical), due to TCE.

The risk and hazard management evaluation for Spring 3 was completed in 2009. The estimated risk has remained below 10^{-6} and the hazard index remained below 1 for two consecutive years. No unacceptable risk or hazard to onsite workers exists. Therefore, the annual ambient air inhalation risk evaluation was continued for the following springs in 2012:

- Ambient Air Near Spring 5 in the HEPA OU
- Ambient Air Near Spring 7 in the Pit 6 Landfill OU

No surface water or green hydrophilic vegetation was present at Springs 5 and 7 during first semester 2013, therefore no ambient air VOC sampling was performed. Springs 5 and 7 have been devoid of surface water or green hydrophilic vegetation since monitoring began in 2003. These springs will be monitored for the presence of surface water or green hydrophilic vegetation in 2014 and air samples will be collected if water is present.

Water-supply well CARNRW-2 is used to fill the Carnegie State Vehicular Recreation Area pond. The baseline risk assessment indicated that if the VOC source in the Pit 6 Landfill OU was not controlled, contaminated ground water could migrate to well CARNRW-2 and result in an unacceptable risk from inhaling VOC vapors volatilizing from the pond. However, an engineered cap was placed over the Pit 6 Landfill preventing infiltration of precipitation and further releases of contaminants from the landfill. The VOC plume originating from the Pit 6 Landfill has not impacted CARNRW-2. No unacceptable risk or hazard exists.

4.1.2.2. Tritium-Contaminated Springs

An unacceptable cumulative risk of 1×10^{-3} was identified in the baseline risk assessment for the inhalation of tritium at Well 8 Spring in the Building 850 area. The risk associated with the inhalation of tritium vapors volatilizing from Well 8 Spring is based on the maximum tritium activity detected (770,000 pCi/L) in 1972. The tritium activities in Well 8 Spring have steadily declined over the decades. The 2009 CMP/CP indicated that the inhalation risk associated with tritium in surface water volatilizing into outdoor ambient air would be re-evaluated annually when surface water is present. The surface water will be sampled and analyzed for tritium semi-annually. The maximum activity will be compared to the current tritium vapor PRG for tap water.

The risk re-evaluation of Well 8 Spring could not be performed in 2012 due to lack of water in the spring. No samples were collected from Well 8 Spring in 2012. Sampling and risk re-evaluation will be conducted in 2013 if surface water is present. Workers do not occupy or plan to occupy the site in the near future, therefore site use restrictions will be maintained and the annual sampling continued until the activity remains below the PRG for two years.

The results of the 2013 risk re-evaluation will be presented in the Annual CMR.

4.2. Ecological Risk and Hazard Management

4.2.1. Ecological Risk and Hazard Management Measures and Contingency Plan Actions Required by the 2009 Compliance Monitoring Report/Contingency Plan

The ecological risk and hazard management measures described in the 2009 CMP/CP (Dibley et al., 2009a) were developed to meet the Remedial Action Objectives for environmental protection. These objectives are to:

1. Ensure ecological receptors important at the individual level of ecological organization (special-status species, i.e., State of California or federally-listed threatened or endangered species or State of California species of special concern) do not reside in areas where relevant hazard indices exceed 1.

2. Ensure changes in contaminant conditions do not threaten wildlife populations and vegetation communities.

The ecological risk and hazard management measures required by the 2009 CMP/CP include:

- Periodically evaluating available biological survey data from the Buildings 801, 851 and the HEPA to determine potential population-level impacts to ground squirrel and deer exposed to cadmium in surface soil in these areas, as well as re-evaluating the ecological hazard associated with cadmium in surface soil in these areas.
- Ensuring the integrity of the Pit 7 Complex landfill caps to prevent exposure to burrowing animals from uranium.
- Evaluating changes in existing contaminant and ecological conditions in OUs 1 through 8 every five years, including re-evaluating VOCs in burrow air in the event that ground water VOC concentrations increase to levels that previously posed a risk to burrowing animals.

As part of the contingency plan presented in the 2009 CMP/CP, periodic review of available biological survey data (e.g., preconstruction survey data, biological monitoring data, surveys conducted for Environmental Impact Statement/Environmental Impact Report (EIS/EIR) preparation, etc.) for the presence of new special-status species is required. Any new special-status species identified is to be evaluated for potential impact from the presence of contamination using the process laid out in the 2009 CMP/CP. The results of this evaluation will be reported on in the annual CMRs.

In addition to reporting on the ecological risk and hazard management and contingency plan measures described in the 2009 CMP/CP, this and future compliance monitoring reports will address several new constituents identified in surface soil and surface water during the most recent five year ecological review for which ecological hazard could not be adequately evaluated due to either a limited data set or the lack of background data. The results of the most recent Five-Year Ecological Review were reported in the 2008 Annual CMR (Dibley et al., 2009b).

This report, and subsequent compliance monitoring reports prepared during the reporting period in which the 2009 CMP/CP is active, will report on ecological risk and hazard management measures and ecological contingency plan actions required by the 2009 CMP/CP.

4.2.2. Cadmium in Surface Soil

As described above, the 2009 CMP/CP required that available biological survey data be periodically reviewed to identify changes in the abundance of deer or ground squirrel over time that could indicate impacts to the populations in the Buildings 801 and 851 areas, and the HEPA from cadmium in surface soil. However, as reported on in the 2011 First Semester CMR, a review of the EPA Ecological Soil Screening Levels for cadmium (U.S. EPA, 2005) and a re-evaluation of the cadmium baseline ecological risk assessment conducted in the Site-Wide Remedial Investigation (SWRI) (Webster-Scholten et al., 1994) concluded that deer and ground squirrels are not at risk from cadmium in surface soil in these areas. Therefore, reviewing available biological survey data from the Buildings 801 and 851 areas and the HEPA to identify changes in the abundance of deer or ground squirrel over time has been discontinued.

The 2009 CMP/CP also required a re-evaluation of the ecological hazard associated with cadmium in surface soil in the Buildings 801 and 851 areas, and the HEPA to determine if continuation of risk and hazard management measures are necessary as a result of potential

impact to burrowing or ground dwelling special-status species. As described in the 2011 Annual CMR, the re-evaluation of ecological hazard associated with cadmium in surface soil in the Building 801 area and HEPA showed cadmium to no longer be an ecological hazard to burrowing or ground dwelling special-status species. As described in the 2012 Annual CMR, additional soil sampling was conducted in the Building 851 area in November of 2012 to further evaluate the potential ecological hazard posed by cadmium in this area. Cadmium was less than the detection limit of 0.5 milligrams per kilogram (mg/kg) in all eight samples. As there is no evidence that cadmium is an ecological hazard to burrowing or ground dwelling special-status species in the Building 851 area, cadmium is no longer considered a contaminant of ecological concern in this area, and will be dropped from further consideration. However, as discussed in the 2012 Annual CMR, an area that is currently used as a programmatic lay-down area behind Building 851 was not sampled due to its highly disturbed nature and poor habitat value. Should this area be retired from use as a lay-down area in the future, sampling for the presence of cadmium is recommended.

As a result of the review of the EPA Ecological Soil Screening Levels for cadmium (U.S. EPA, 2005), the re-evaluation of the cadmium baseline ecological risk assessment conducted in the SWRI (Webster-Scholten et al., 1994), and the additional surface soil sampling conducted in the Building 801 and Building 851 areas and the HEPA, the presence of cadmium is no longer considered a potential ecological hazard to the deer and ground squirrel populations, nor a potential ecological hazard to burrowing or ground dwelling special-status species. Therefore, cadmium is no longer considered an ecological contaminant of concern in these areas, and is dropped from further consideration.

4.2.3. Uranium in Subsurface Soil within the Pit 7 Complex Landfills

The 2009 CMP/CP requires the Pit 7 Complex landfills to be inspected and any burrows or holes in the cover filled to prevent unacceptable exposure of animals to uranium in the pit waste. This is done as part of the inspection and maintenance program for the Pit 7 Complex. Section 3.4.3 describes the quarterly landfill inspection results, Section 3.4.4 describes the annual subsidence monitoring results, and Section 3.4.5 describes any maintenance performed. Results of the 2012 inspections were reported on in the 2012 Annual CMR. Results of the 2013 inspections will be reported on in the 2013 Annual CMR.

4.2.4. Constituents Identified in the 2008 Five Year Ecological Review Requiring Additional Evaluation

As reported in the 2010 First Semester CMR (Dibley et al., 2010b), the ecological hazard of several new constituents detected in surface soil and surface water could not be adequately evaluated in the Five-Year Ecological Review due to either a limited data set or the lack of a developed background value. In surface soil, the ecological hazard from potassium-40 was not evaluated due to the lack of a developed background level. As reported on in the 2012 Annual CMR, available Site 300 surface soil data were reviewed to determine if sufficient data were available to determine a Site 300 background level for potassium-40. The evaluation of almost 400 surface soil samples analyzed for potassium-40 at Site 300 showed potassium-40 to be at background levels. Therefore, potassium-40 is not considered an ecological contaminant of concern, and thus will not be considered further.

The Five-Year Ecological Review concluded that chloride, ortho-phosphate, total phosphorus, nitrate plus nitrite, ammonia nitrogen and uranium in several springs required additional evaluation to determine their potential ecological hazard. As reported in the 2010 First Semester CMR, additional evaluation showed that many of these constituents were within Site 300 background or the data were misinterpreted in the Five-Year Ecological Review, and thus were dropped from further consideration. Constituents that require additional evaluation include chloride in Spring 14, total phosphorus as P and ammonia in Spring 4, and total uranium in Springs 10 and 11.

Although the maximum chloride concentration detected in Spring 14 exceeds the maximum concentration observed in background springs, the chloride concentration in the most recent sample collected from Spring 14 in December of 2003 was below the maximum concentration detected in the background springs. A sample collected from Spring 14 in March 2013 was right at the background concentration for chloride in Site 300 springs. While it appears that chloride in Spring 14 is not of ecological concern, chloride concentrations in this spring will be periodically monitored to ensure concentrations remain within background levels.

The single sample from Spring 4 analyzed for total phosphorus as P exceeded the maximum concentration observed in the background springs. The maximum concentration of ammonia nitrogen (8.7 mg/L) in Spring 4 was detected in the most recent sample available that was analyzed for this constituent (June 2000). Ammonia nitrogen concentrations in background springs were not available at the time of the Five-Year Ecological Review. Spring 17, a Site 300 background spring, was sampled for ammonia nitrogen in August 2012. Ammonia nitrogen was detected in this spring at a concentration of 0.52 mg/L. Spring 4 will be sampled for ammonia nitrogen and total phosphorus at its next regularly scheduled sampling date.

The maximum total uranium concentration as mg/L (estimated from uranium-238 results) in Spring 10 and Spring 11 exceeded the Site 300 background concentration in the June 2002 sample, the most recent sample available for both springs at the time of the Five-Year Ecological Review. Both samples were analyzed for uranium isotopes using mass spectrometry, and results from both springs showed an uranium-235/uranium-238 ratio of 0.0072. This is the natural ratio for these uranium isotopes, and indicates no added depleted uranium is present.

Spring 11 was again sampled in August of 2012. Spring 10 was dry at this time, and thus a sample could not be obtained. Spring 11 continues to show high concentrations of uranium (0.074 mg/L) compared to the Site 300 maximum background concentration of 0.028 mg/L (detected in Spring 16). The uranium-235/uranium-238 ratio was again 0.0072. Spring 16, a Site 300 background spring located in the same canyon as Springs 10 and 11, was dry, and therefore a sample could not be obtained. Both Springs 10 and 16 will be sampled for uranium when water is again available from these springs. Data from the additional spring sampling will be reported on in future compliance monitoring reports as they become available.

4.2.5. Identification and Evaluation of New Special Status Species

Contingency actions that are described in the 2009 CMP/CP include periodically evaluating available biological survey data (e.g., pre-construction survey data, biological monitoring data, surveys conducted for EIR/EIS preparation) for the presence of new special-status species and reporting the results of the evaluation in the annual compliance monitoring reports. For the year 2012, data from surveys conducted for all ground disturbing activities and observations made by LLNL wildlife biologists were evaluated and reported on in the 2012 Annual CMR. No new

special-status species were identified in areas of potentially elevated ecological risk. New biological information collected during 2013 will be evaluated and reported on in the 2013 Annual CMR.

5. Data Management Program

The management of data collected during first semester 2013 was subject to Environmental Restoration Department (ERD) data management process and standard operating procedures (Goodrich and Lorega, 2012). This data management process tracks sample and analytical information from initial sampling plan through data storage in a relational database. As part of the standard operating procedures for data quality, this process includes sample planning, chain of custody tracking, sample collection history, electronic and hard copy analytical results receipt, strict data validation and verification, data quality control procedures, and data retrieval and presentation. The use of this system promotes and provides a consistent data set of known quality. Quality assurance and quality control are performed consistently on all data.

5.1. Modifications to Existing Procedures

The relational database used to maintain the data for the CMP continued to be Oracle on Linux servers. General maintenance and refinements continued. Improvements and additions to the ERD data management process continued to be implemented in an ongoing effort to automate and upgrade the applications, including verifications, query pivot tool, nitrate report tool, the sampling field sheet creation tool, and the self monitoring report tool. The Treatment Facility Real Time (TFRT) application, a high frequency data acquisition system for treatment facilities and associated extraction wells, continued to be improved extending options available to users and refining tools to improve usability. Plotting capabilities of data for a single treatment facility was made available in the TFRT application. Electronic mail notification was added to inform staff when there is no electronic communication with a treatment facility. In the Sample Planning and Chain of Custody Tracking application, links were added to allow samplers to query for more information about the wells they are about to visit. Standard operating procedures are up to date.

5.2. New Procedures

The process of re-architecting existing computer programs that generate web pages continues, with the dual goals of improving maintainability and user efficiency. No new applications were created. New abilities were added to existing applications. A mobile application version of TFRT Well Data was made available in beta version to staff. The Well Track application manages request, progress, and completion of fieldwork at wells. The ability to request survey and video of wells and to self-manage email notifications was added this semester.

6. Quality Assurance/Quality Control Program

LLNL conducted all compliance monitoring in accordance with the approved Quality Assurance Project Plan (QAPP) (Dibley, 1999) requirements for planning, performing,

documenting, and verifying the quality of activities and data. The QAPP was prepared for CERCLA compliance and ensures that the precision, accuracy, completeness, and representativeness of project data are known and are of acceptable quality. The QAPP is used in conjunction with the LLNL ERD Standard Operating Procedures (SOPs), Operations and Maintenance Manuals (O&Ms), Work Plans, Sampling Plans, Integration Work Sheets (IWSs), and Site Safety Plans. Modifications to existing LLNL quality assurance/quality control (QA/QC) procedures, new QA/QC procedures that were implemented during this reporting period, self-assessments, quality issues and corrective actions, and analytical and field quality control are discussed in this section.

6.1. Modifications to Existing Procedures

Some ERD SOPs that were scheduled to be included in Revision 14 remain in the review and update process as listed:

- SOP 1.8: Disposal of Investigation-Derived Wastes (Drill Cuttings, Core Samples, and Drilling Mud).
- SOP 1.14: Final Well Development/Specific Capacity Tests at LLNL Livermore Site and Site 300.
- SOP 2.8: Installation of Dedicated Sampling Devices.
- SOP 3.1: Water-Level Measurements.
- SOP 3.2: Pressure Transducer Field Calibration.
- SOP 3.3: Hydraulic Testing (Slug/Bail).
- SOP 3.4: Hydraulic Testing (Pumping).
- SOP 4.7A: Livermore Site Treatment and Disposal of Well Development and Well Purge Fluids.
- SOP 4.14: Mapping with the Trimble Pathfinder Pro XR GPS System.

The preceding list of SOPs, along with other procedures due for review will be released as Revision 15, when completed.

6.2. New Procedures

A new procedure titled, “Site 300 Treatment Media Inventory and Tracking Process” is being developed and will also be included in the release of Revision 15. The procedure is part of ERD’s path forward to help ensure treatment media meets the specified acceptance criteria prior to utilizing the material(s) at treatment facilities. The procedure outlines processes to effectively track treatment media by type, quantity, and by facility where media is installed, as well as a treatment media sample collection and analysis plan. Procedures that have been included in the Operations and Maintenance Manual, Volume 1, will be included in the SOPs binder beginning with Revision 15. The procedures will undergo review, updating, and formatting processes prior to including them with the next release of SOPs. These procedures include “Carbon Canister Removal and Carbon Conditioning”, “Conditioning Treatment for Ion Exchange Resins” and “Removing Carbonate Deposits from Portable Treatment Unit Air Strippers Using Citric Acid.”

6.3. Self-assessments

ERD participates in self-assessments, both formal and informal. Assessments are conducted to evaluate work activities to procedural, QA, management, and Integrated Safety Management System (ISMS) practices. External regulatory agencies and environmental restoration management performs frequent assessments and management work observations, verifications, and inspections (MOVIs) of ERD work activities. There were a total of twenty-five (sixteen were for Site 300 work activities) assessment activities consisting of MOVIs, a Storm Water Pollution Prevention Plan annual audit, a DOE Consolidated Auditing Program (DOECAP) analytical laboratory audit at ALS in Fort Collins, Colorado, a Management Self-assessment (MSA) of Site 300 CERCLA treatment facility operations and sampling activities during the first semester of 2013. Issues and deficiencies observed during assessments are tracked from inception to resolution using the institutional Issues Tracking System (ITS). There were no deficiencies associated with the assessments to track in ITS; however, there were observations noted, issues discussed, and determinations made as a result of the MSA. Issues observed during the analytical laboratory assessment are managed through the DOECAP process.

The IWSs are in the process of undergoing a triennial review, which consists of a complete review and approval of the safety document(s) by the Environmental, Safety, & Health team, the Facility Point of Contact, the Responsible Individual, and the Authorizing Individual. Eight IWSs have completed the triennial review or an annual review process. There are five remaining IWSs currently going through the review process.

6.4. Quality Issues and Corrective Actions

Quality improvement, nonconformance, and corrective action reporting is documented using the Quality Improvement Form (QIF). QIF-11-003 was generated to describe a quality effecting issue where vendor procured resin contaminated with VOCs was inadvertently used at ground water treatment facilities at Site 300. Corrective action was implemented and the QIF was successfully closed out. There were no QIFs processed during the first semester 2013 reporting period.

6.5. Analytical Quality Control

Data review, validation, and verification are conducted on 100% of the incoming analytical data in accordance with ERD SOP 4.6: Validation and Verification of Radiological and Nonradiological Data Generated by Analytical Laboratories. Contract analytical laboratories are contractually required to provide internal quality control (QC) checks in the form of method blanks, laboratory control samples, matrix spikes, and matrix spike or sample duplicate results with every analysis. During the data validation process, the analytical QC data and associated QC acceptance criteria (control limits) are reviewed. Data qualifier flags are assigned to analytical data that fall outside the QC acceptance criteria. Data qualifier flags and their definitions are listed in the Acronyms and Abbreviations in the Tables section of this report. The qualifier flags, when they exist, appear next to the analytical data presented in the treatment facility compliance tables of this report. Because rejected data are not used for decision-making, the rejected analytical data are not displayed in the tables, only the "R" flag is presented. Data is qualified as rejected only when there is a serious deficiency in the ability to analyze the sample and meet QC criteria.

As previously discussed, the possible impact to ERD data was evaluated, due to BC Laboratories, Inc. in Bakersfield, California reporting five of fourteen compounds outside the acceptance criteria for a Proficiency Testing (PT) sample analyzed for nitroaromatics in water by EPA Method 8330. Out of the failed compounds reported by BC, there was a single positive detection of nitrobenzene (reported as a false positive by BC) found in the ERD data set. Nitrobenzene was detected in a ground water sample collected from well W-812-02 on January 31, 2012. The monitor well W-812-02 was re-sampled on July 23, 2012 and submitted to BC Laboratories, Inc. for the E8330LOW test. A collocated sample was also collected at the same time and sent to a different CAL for the E8330LOW analysis.

The E8330LOW test results reported by BC Laboratories, Inc. from well W-812-02 collected on July 23, 2012 consisted of HMX at 11 µg/L and nitrobenzene at 43 µg/L. The collocated sample collected from well W-812-02 on July 23, 2012 and submitted to Caltest Analytical Laboratory in Napa, California for an E8330LOW test resulted in no detections above the reporting limits for any of the 8330 compounds. A subsequent sample collected from well W-812-02 on November 26, 2012 and analyzed by BC Laboratories for E8330LOW continued to demonstrate the presence of HMX at a concentration of 5.2 µg/L and Nitrobenzene at 33 µg/L. Follow-up sampling has been implemented and the test results are currently being reviewed. Contract Laboratory Program data packages were also requested from each CAL where collocated samples collected from well W-812-02 were submitted for E8330LOW testing.

6.6. Field Quality Control

There were no issues regarding trip blank, field blank, or equipment blank analyses encountered during this reporting period.

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Figure 2.8-4. Building 851 Firing Table site map showing monitor well locations.

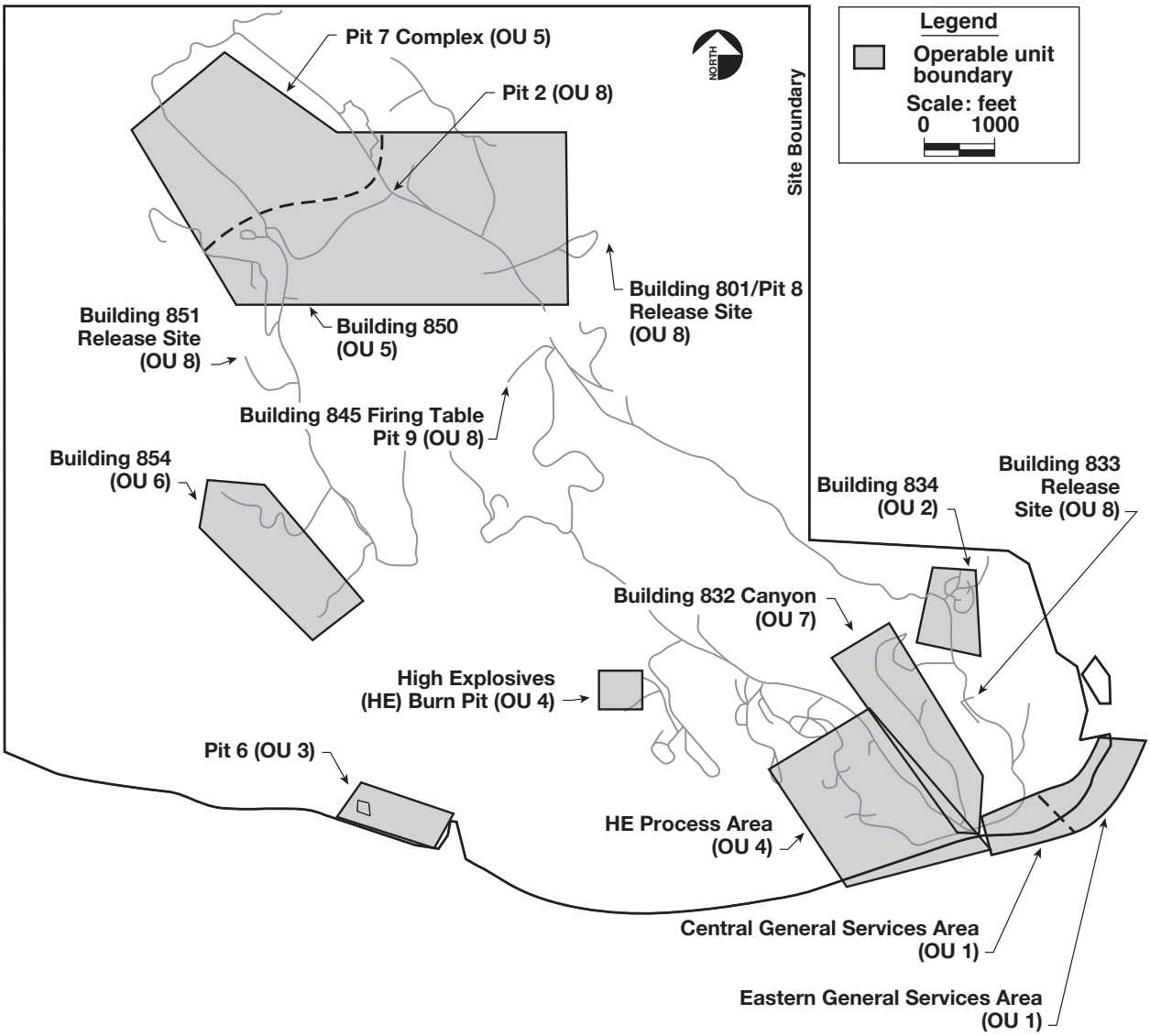

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Figure 2-1. Site 300 map showing Operable Unit locations.

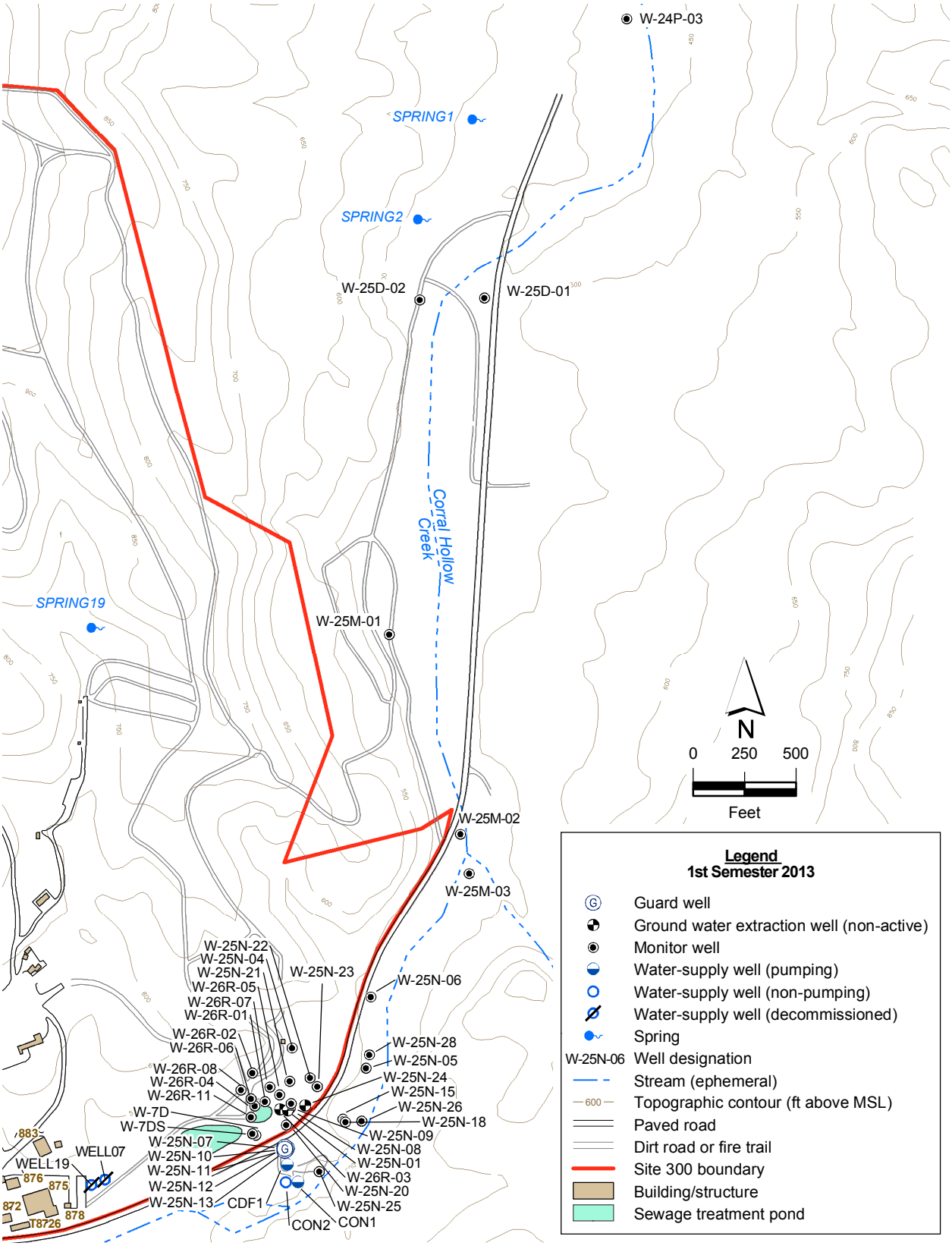


Figure 2.1-1. Eastern General Services Area Operable Unit site map showing monitor, extraction and water-supply wells.

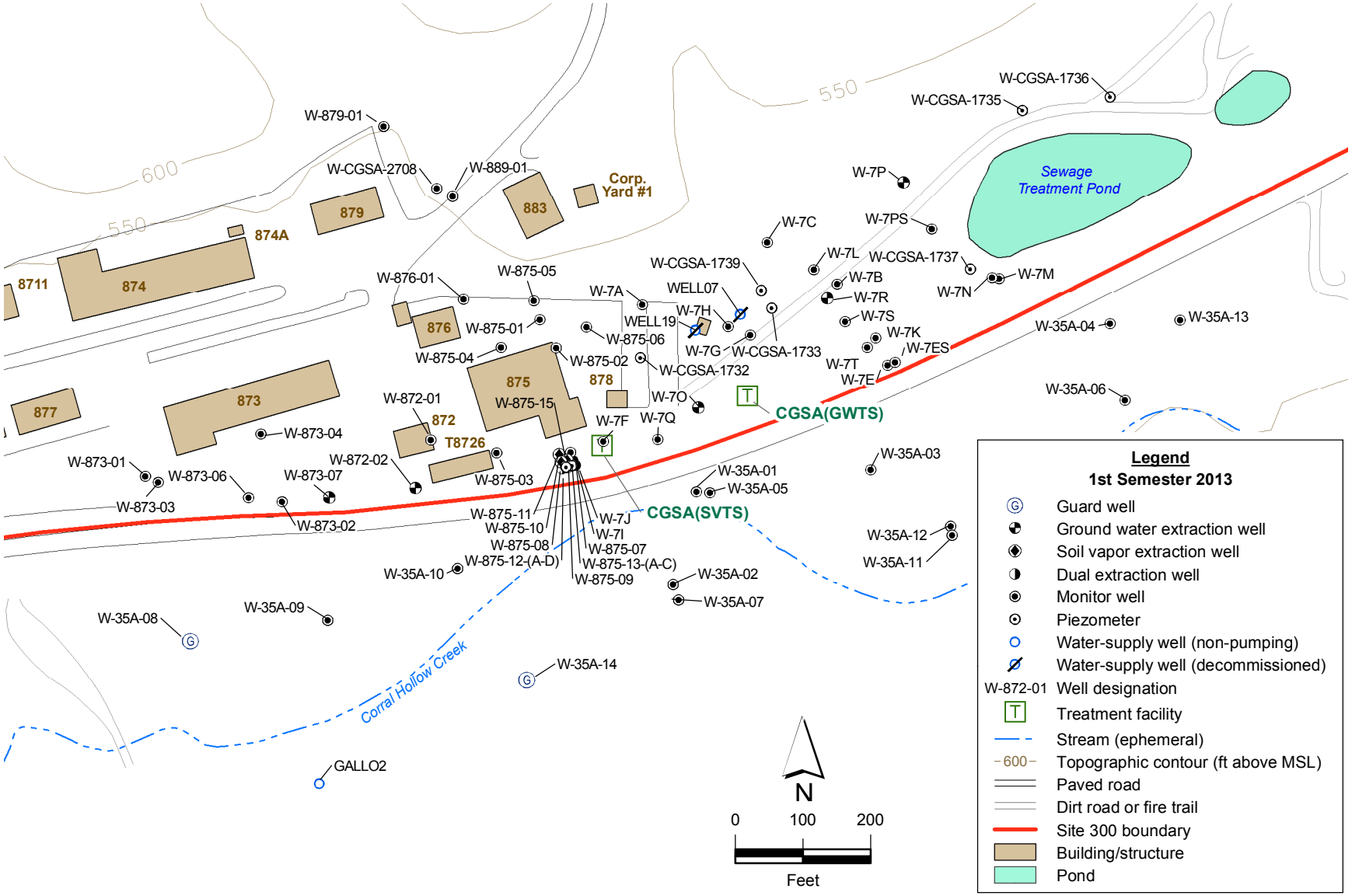


Figure 2.1-2. Central General Services Area Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.

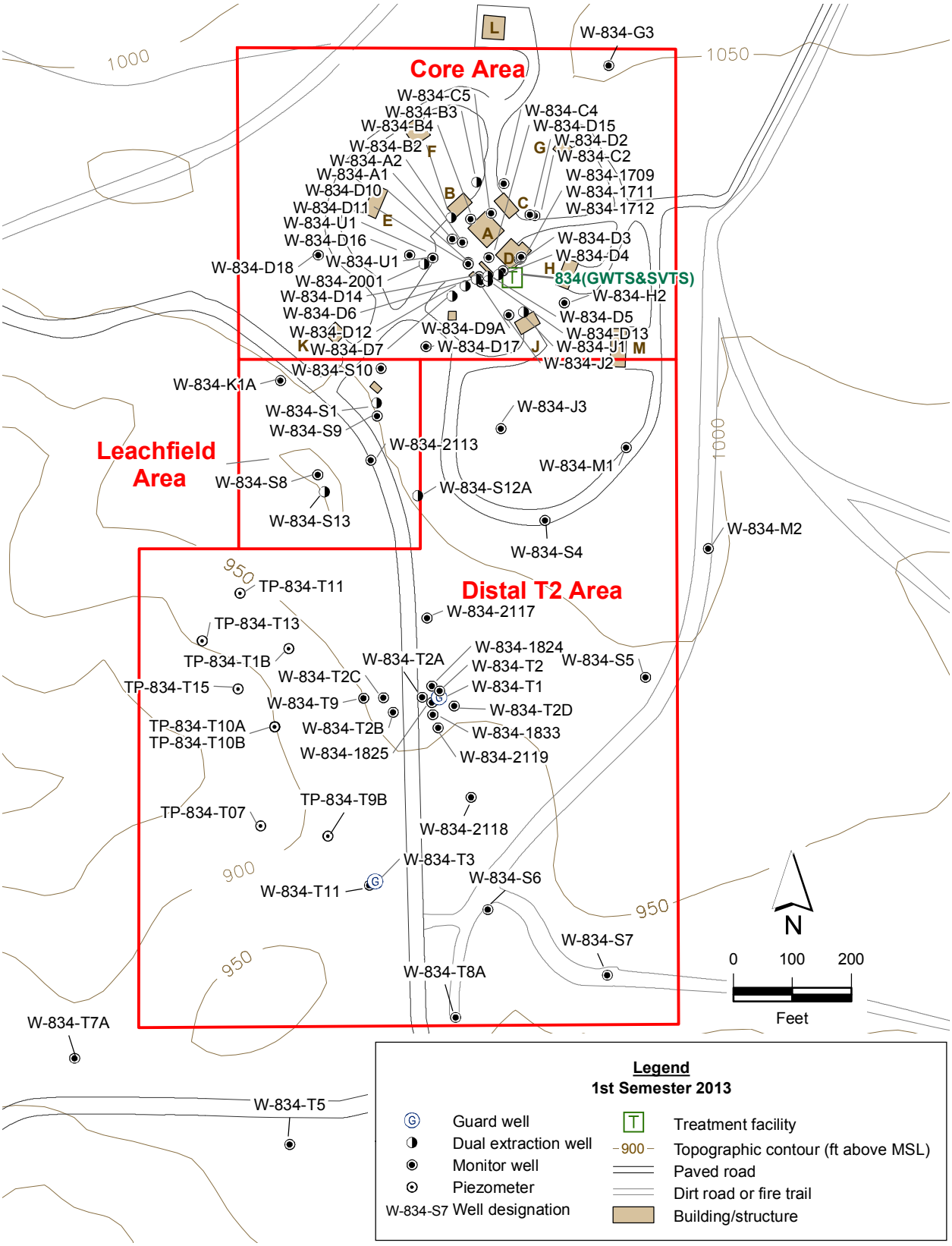


Figure 2.2-1. Building 834 Operable Unit site map showing monitor and extraction wells, and treatment facility.

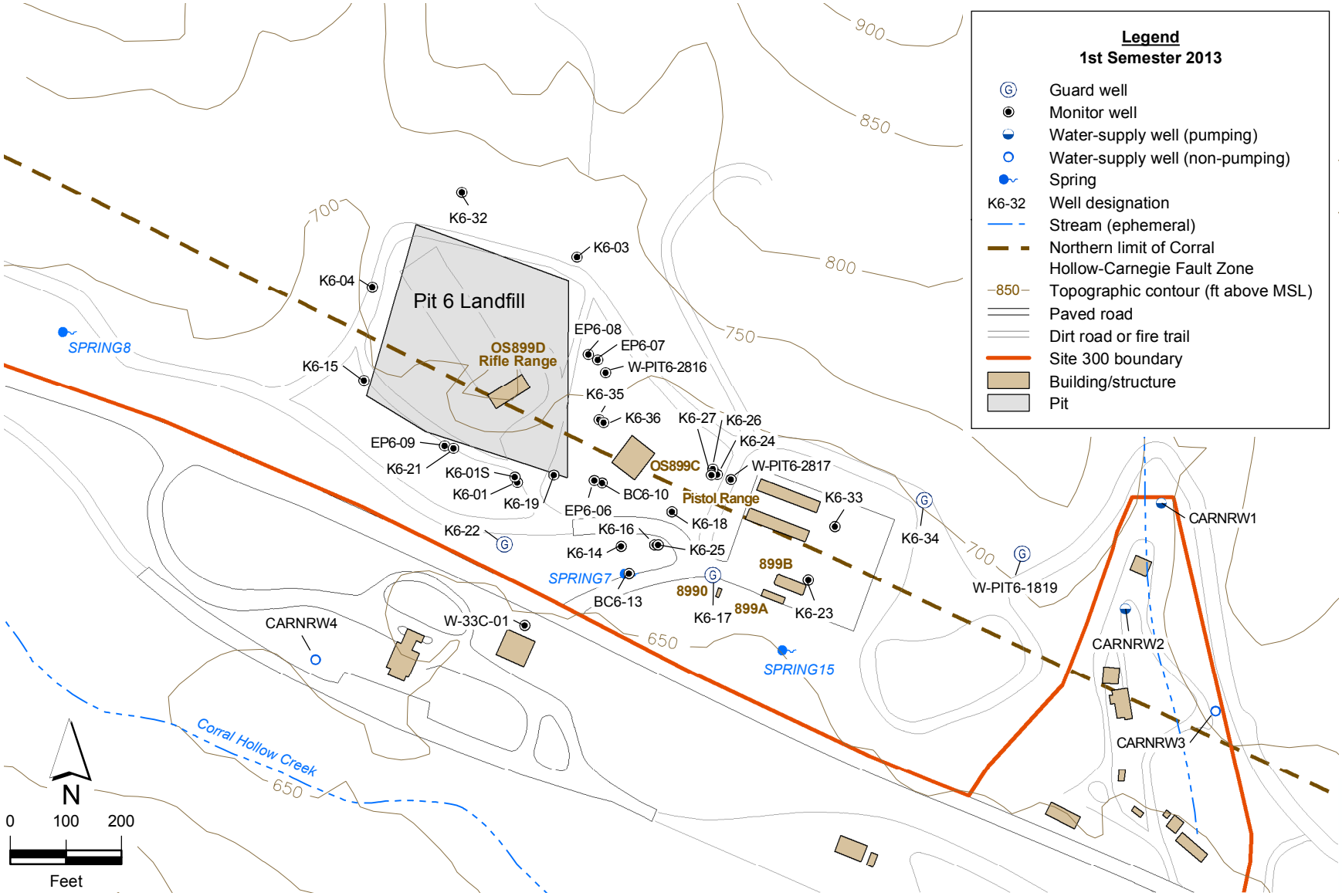


Figure 2.3-1. Pit 6 Landfill Operable Unit site map showing monitor and water-supply wells.

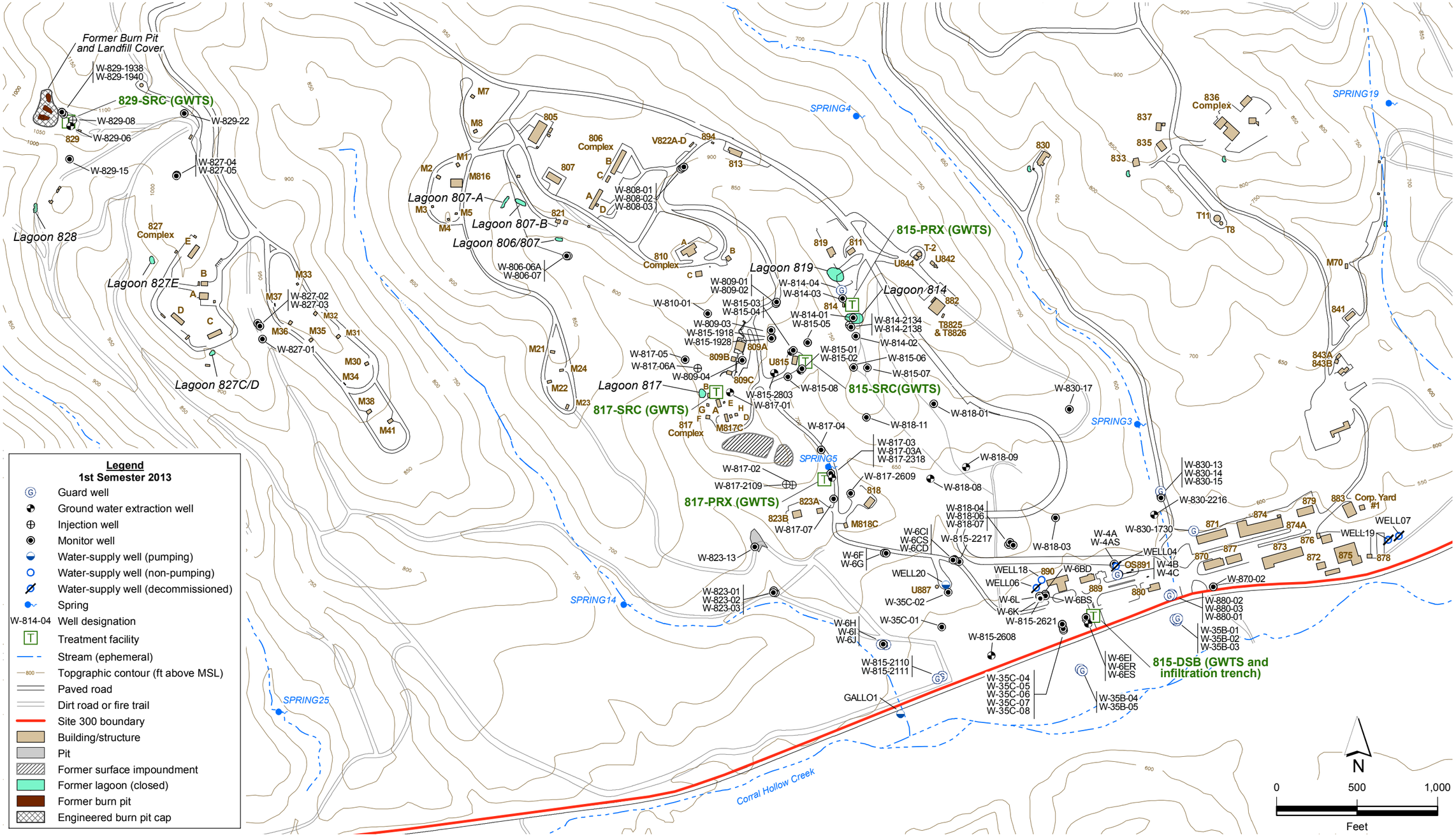
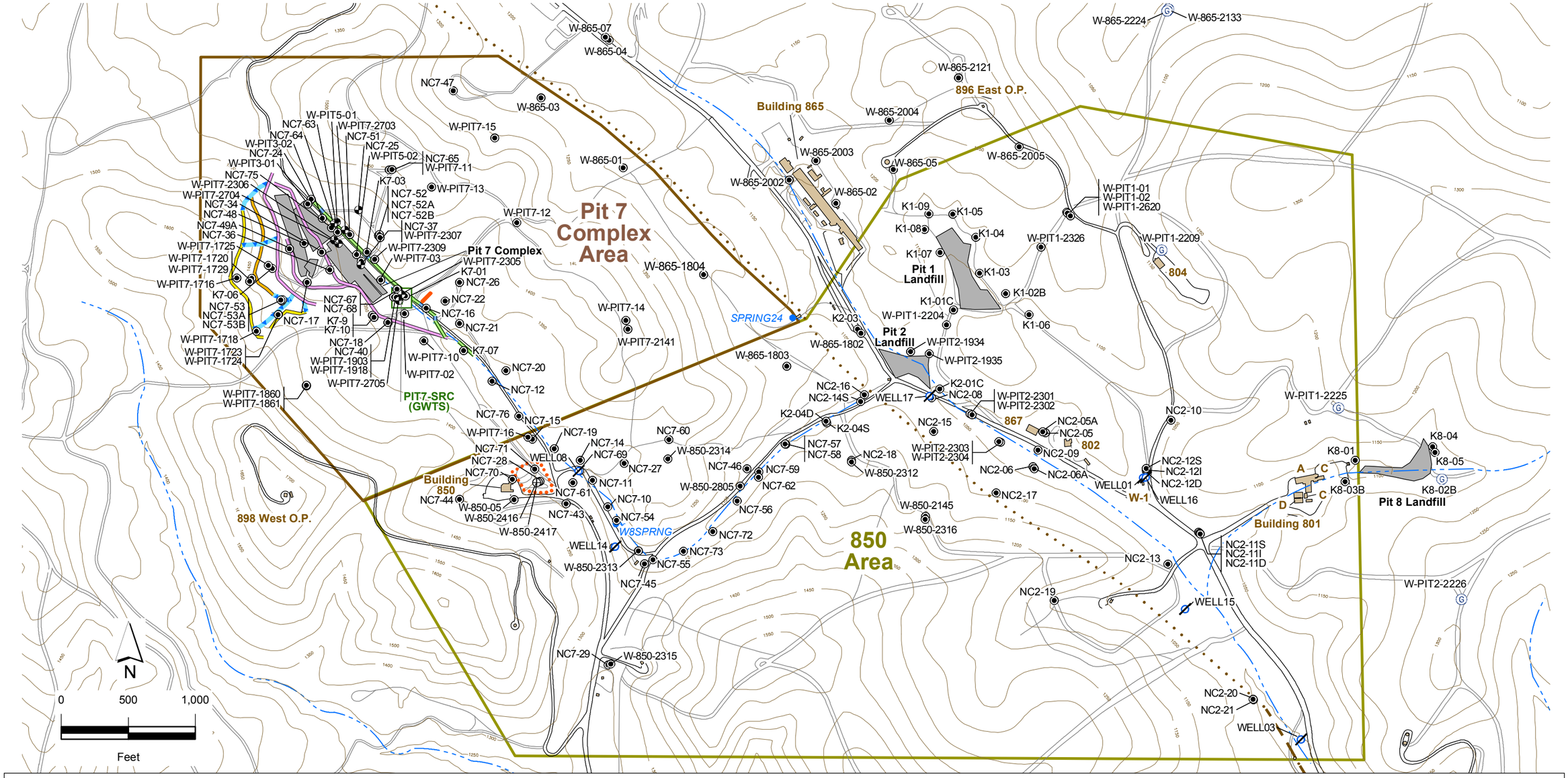


Figure 2.4-1. High Explosives Process Area Operable Unit site map showing monitor, extraction, injection and water-supply wells, and treatment facilities.



Legend
1st Semester 2013

- Guard well
- Ground water extraction well
- Injection well
- Monitor well
- Water-supply well (decommissioned)
- Spring
- NC7-45 Well designation
- Treatment facility

Drainage diversion system
- Pre-existing concrete drain
- Subsurface pipe
- Surface drainage channel
- Upper subsurface drainage trench
- Lower subsurface drainage trench
- Downslope surface drainage trench
- Infiltration trench

- Corrective action management unit (CAMU)
- Stream (ephemeral)

Elk Ravine Fault:
- dotted where concealed
- dashed where inferred

- 900 Topographic contour (ft above MSL)
- Paved road
- Dirt road or fire trail

- Building/structure
- Pit

Figure 2.5-1. Building 850 and Pit 7 Complex area site map showing monitor, extraction, and injection wells, treatment facility and other remediation features.

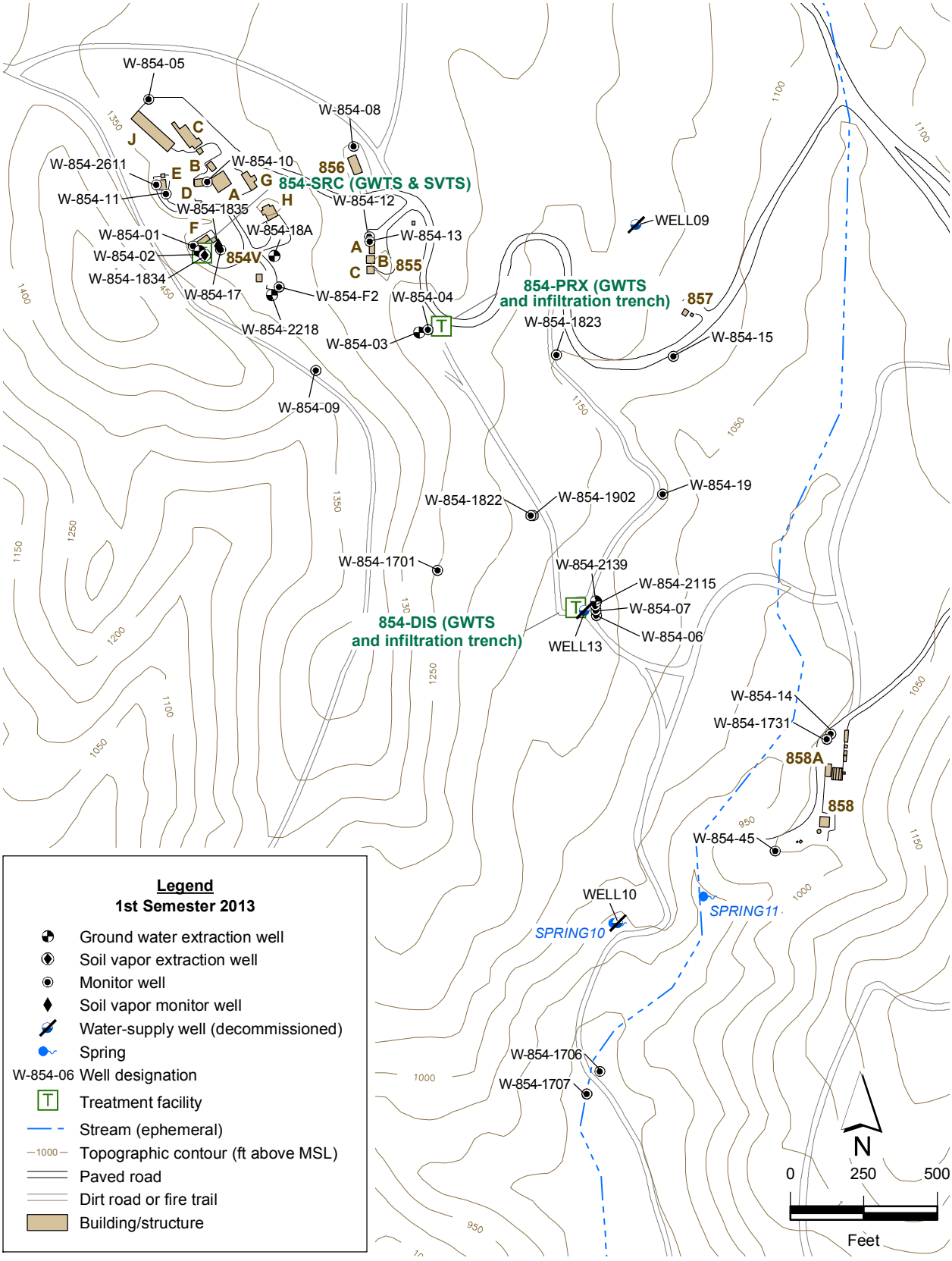


Figure 2.6-1. Building 854 Operable Unit site map showing monitor and extraction wells, and treatment facilities.

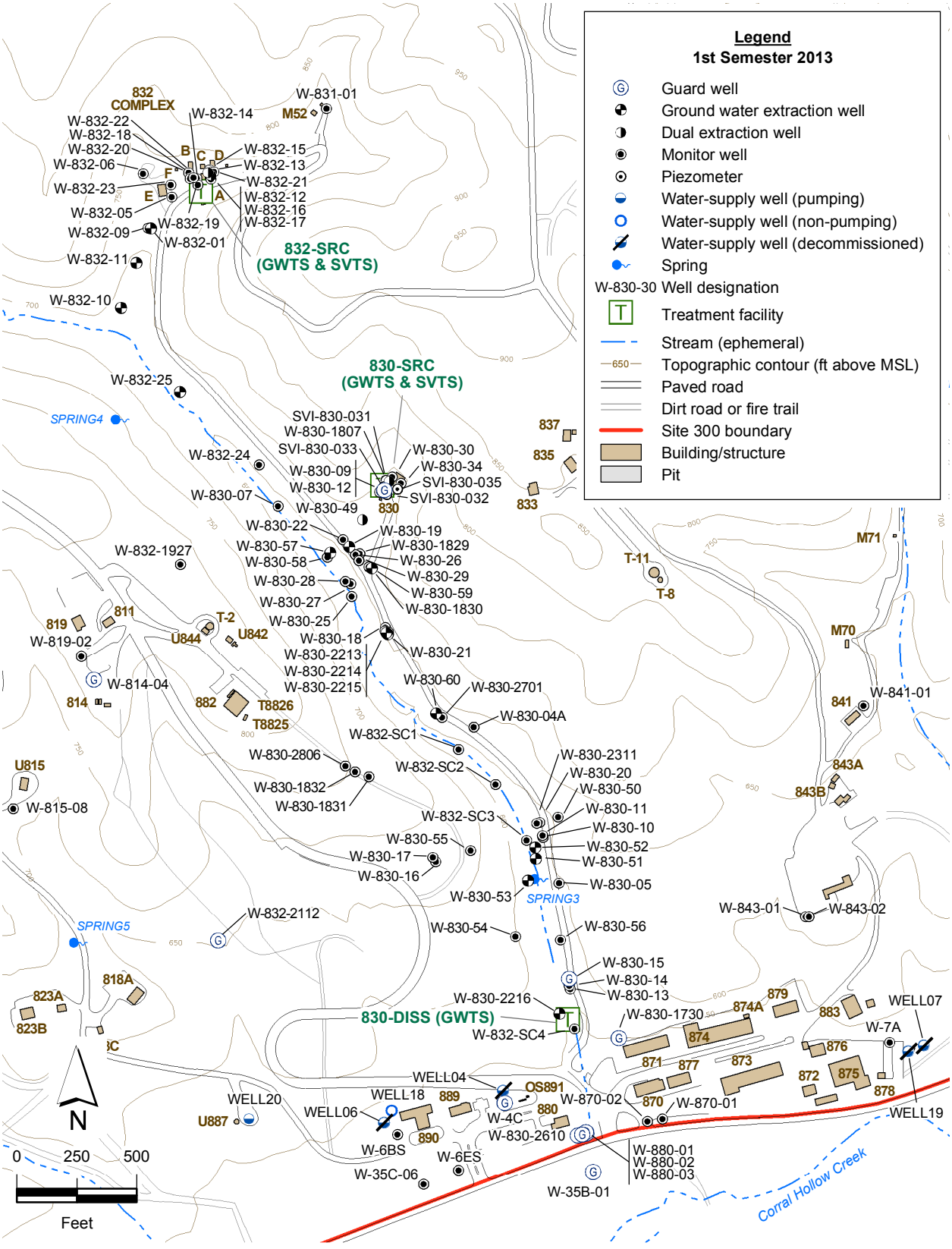
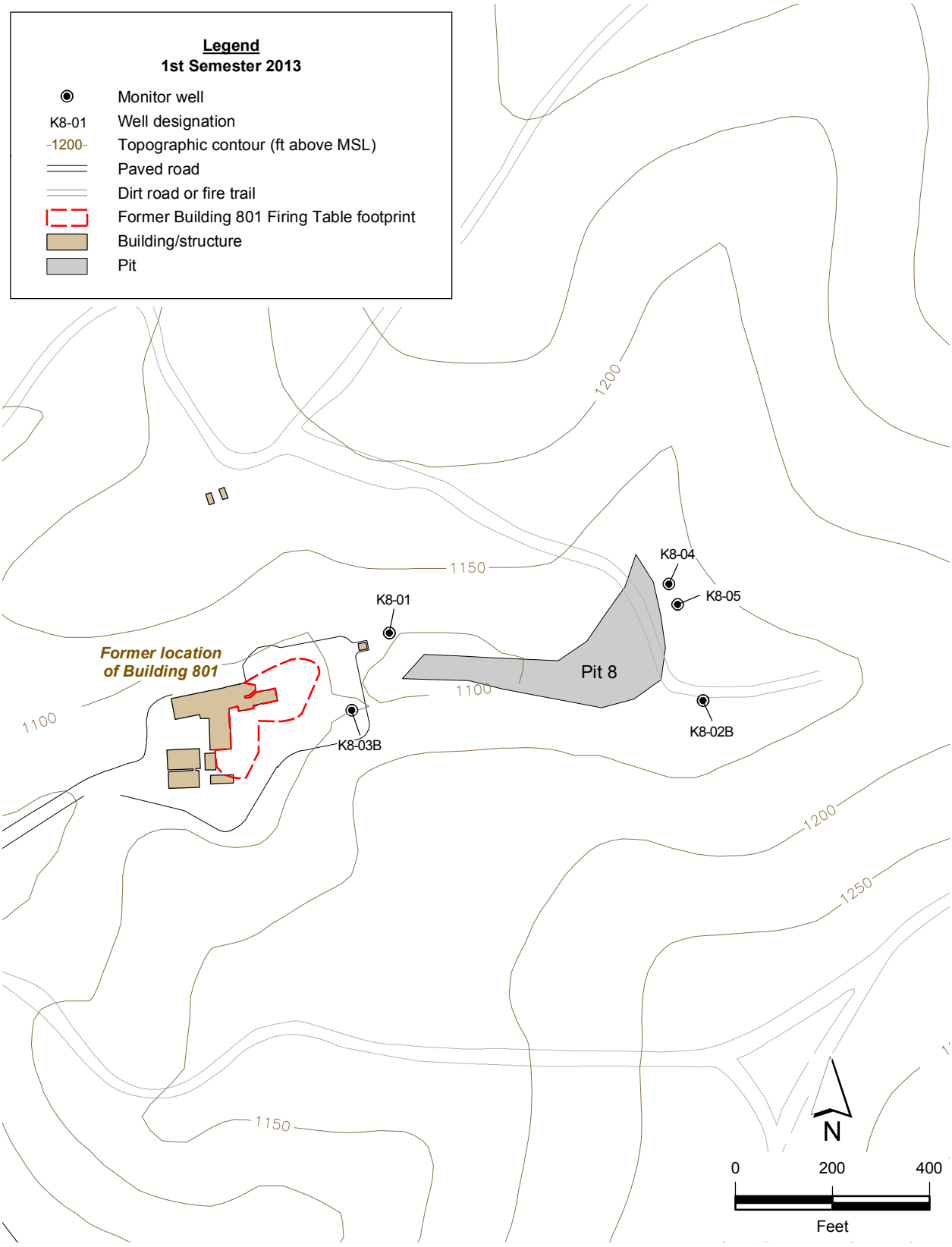


Figure 2.7-1. Building 832 Canyon Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.



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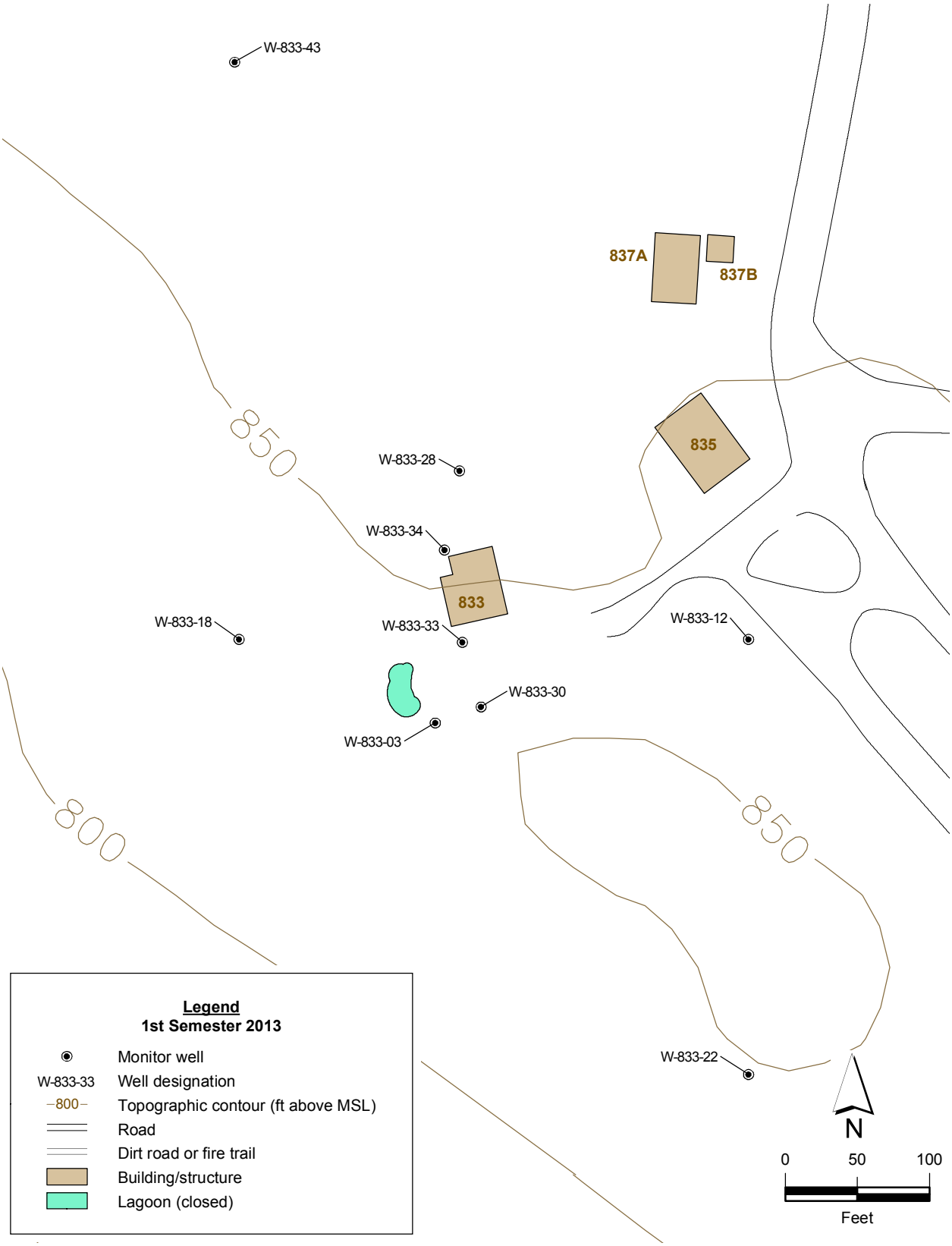

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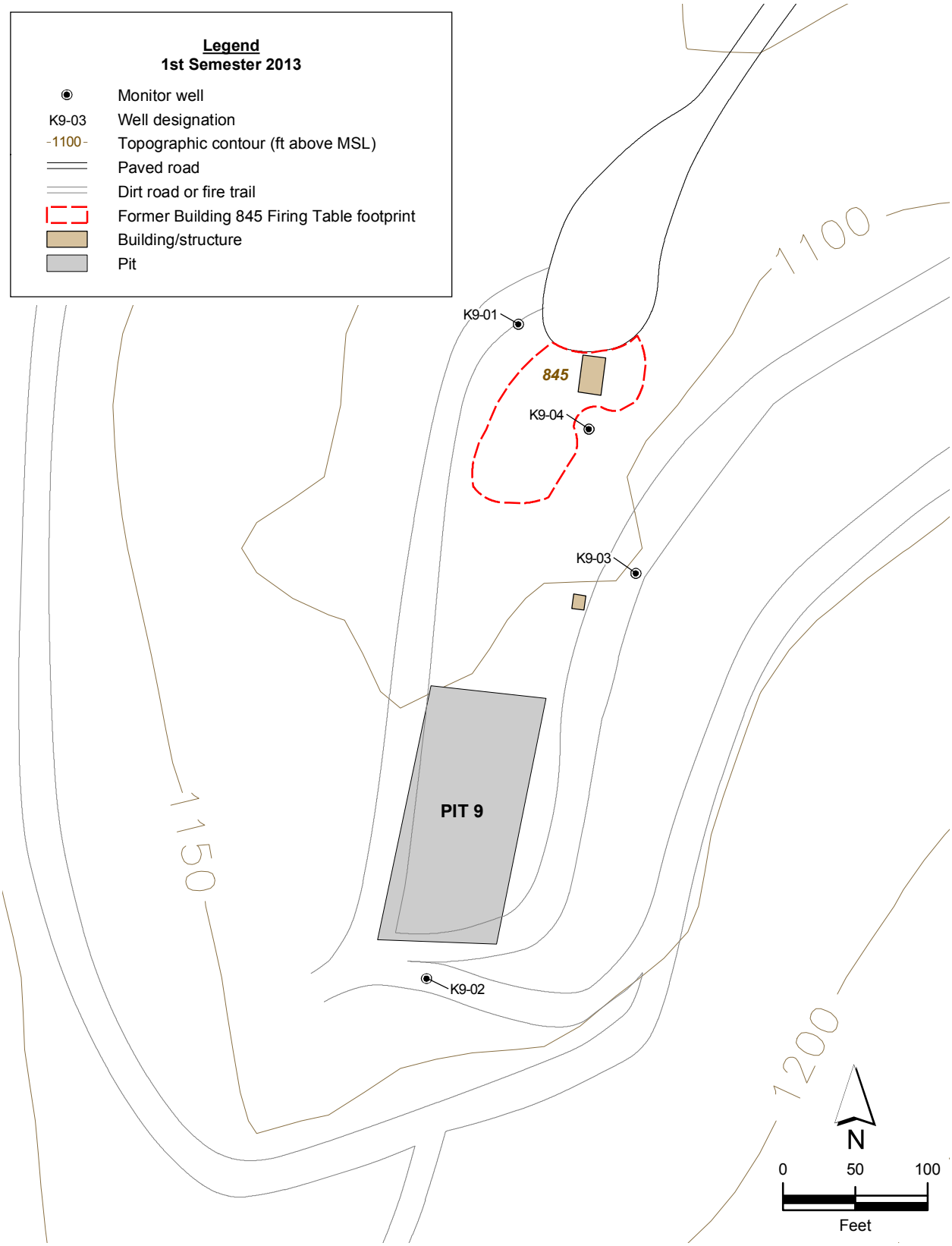

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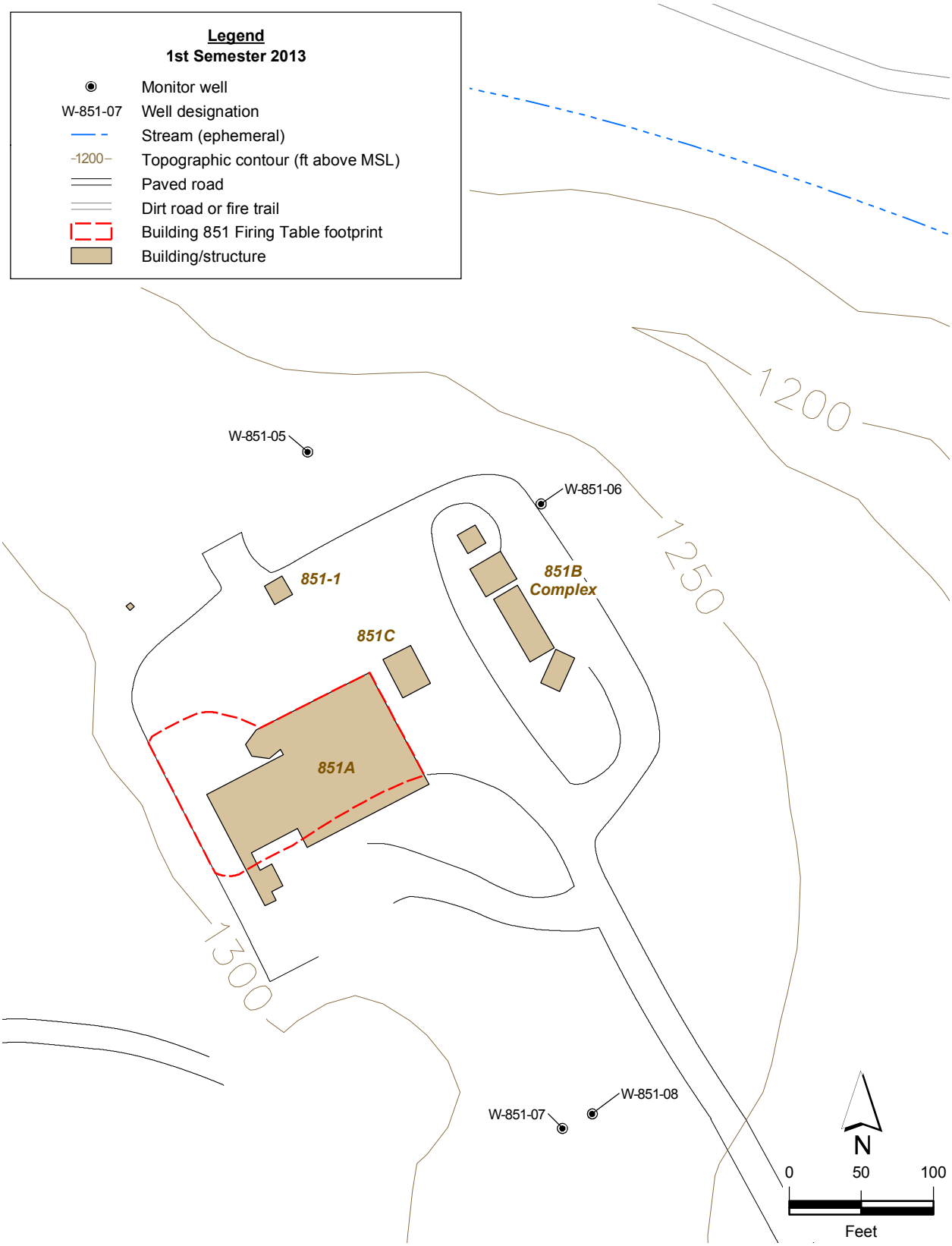

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Acronyms and Abbreviations

1,1-DCA	1,1-Dichloroethane
1,2-DCA	1,2-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCE	1,2-Dichloroethene (total)
1,1,1-TCA	1,1,1-Trichloroethane
1,1,2-TCA	1,1,2-Trichloroethane
2-ADNT	4-Amino-2,6-dinitrotoluene
4-ADNT	4-Amino-2,6-dinitrotoluene
815	Building 815
817	Building 817
829	Building 829
832	Building 832
834	Building 834
845	Building 845
850	Building 850
851	Building 851
854	Building 854
A	Annual
As N	As nitrogen
As $CaCO_3$	As calcium carbonate
BTEX	Benzene, toluene, ethyl benzene, and xylene
°C	Degrees Celsius
C12-C24	Diesel range organic compounds in the carbon 12 to carbon 24 range
CAL	Contracted analytical laboratories
CAMU	Corrective Action Management Unit
CAP	Corrective and Preventative Action Program
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFE	Carbon filter effluent
CFI	Carbon filter influent
CF2I	Second aqueous phase granular carbon filter influent
CF3I	Third aqueous phase granular carbon filter influent
cfm	Cubic feet per minute
CFORM	Chloroform
CFV2	Second vapor phase granular activated carbon filter effluent
CGSA	Central General Services Area
CHC	Corral Hollow Creek
c-1,2-DCE	cis-1,2-Dichloroethene
CMP/CP	Compliance Monitoring Plan/Contingency Plan
CMR	Compliance Monitoring Report
CO_2	Carbon dioxide
COC	Contaminants of Concern
CTET	Carbon tetrachloride
DEET	n,n-diethyl-meta-toluamide
DIS	Discretionary sampling (not required by the CMP)
DISS	Distal south

DMW	Detection monitor well
DOE	Department of Energy
DSB	Distal Site Boundary
DTSC	Department of Toxic Substances Control
DUP	Duplicate or collocated QC sample
E	Effluent (acronym found in Treatment Facility Sampling Plan Tables)
E	Sample to be collected during even numbered years (i.e., 2012) (acronym found in Sampling Plan Tables)
EcoSSLs	Ecological Soil Screening Levels
EFA	Environmental Functional Area
EGSA	Eastern General Services Area
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EMS	Environmental Management System
EPA	Environmental Protection Agency
ERD	Environmental Restoration Department
ES&H	Environmental Safety and Health
EV	Effluent vapor
EW	Extraction well
Freon 11	Trichlorofluoromethane
Freon 113	1,1,2-trichloro-1,2,2-trifluoroethane
ft	Feet
ft^3	Cubic feet
g	Gram(s)
GAC	Granular activated carbon
gal	Gallon(s)
GIS	Geographic Information Systems
gpd	Gallons per day
gpm	Gallons per minute
GSA	General Services Area
GTU	Ground Water Treatment Unit.
GW	Guard well
GWTS	Ground Water Treatment System
HE	High Explosives
HEPA	High Explosives Process Area
H-H	Hetch-Hetchy
HMX	High-Melting Explosive
HQ	Hazard quotient
HSU	Hydrostratigraphic unit
I	Influent
ICP-MS	Inductively Coupled Plasma - Mass Spectrometry
ISMA	*In Situ* Microcosm Array
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
ITS	Issues Tracking System
IV	Influent vapor
IW	Injection well
IWS	Integrated Work Sheet
K-40	Potassium-40
kft^3	Thousands of cubic feet
kg	Kilograms

kgal	Thousands of gallons
km	Kilometers
LCS	Laboratory Control Sample
LHC	Light hydrocarbon
LLNL	Lawrence Livermore National Laboratory
µg/L	Micrograms per liter
$\mu g/m^3$	Micrograms per meters cubed
µmhos/cm	Micro ohms per centimeter
µS	Microsiemens
M	Monthly
MCL	Maximum Contaminant Level
MeCL	Methylene chloride
Mgal	Millions of gallons
Mg/kg/d	Milligram per kilogram per day
mg/L	Milligrams per liter
MNA	Monitored Natural Attenuation
MOVI	Management observations, verifications, and inspections
MSA	Management self-assessment
MSL	Mean Sea Level
MTU	Miniature Treatment Unit
mv	Millivolts
MWB	Monitor well used for background
N	No
NB	Nitrobenzene
N_2	Nitrogen
NO_3	Nitrate
NA	Not applicable
NT	Nitrotoluene
NTU	Nephelometric turbidity units
O	Sample to be collected during odd numbered years (i.e., 2013)
OR	Occurrence Report
ORP	Oxidation/reduction potential
OU	Operable unit
O&M	Operations and Maintenance
P/PO_4	Phosphorous
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethene
pCi/L	PicoCuries per liter
pH	A measure of the acidity or alkalinity of an aqueous solution
PHG	Public Health Goal
PLC	Programmatic logic control
ppb_v	Parts per billion by volume
ppm_v	Parts per million on a volume-to-volume basis
PBA	Programmatic Biological Assessment
PPCP	Pharmaceutical and Personal Care Product analytes
PRX	Proximal
PRXN	Proximal north
PSDMP	Post-Monitoring Shutdown Plan
PTMW	Plume Tracking Monitor Well
PTU	Portable Treatment Unit

Q	Quarterly
QAPP	Quality Assurance Project Plan
QA/QC	Quality assurance/quality control
QIF	Quality Improvement Form
RAOs	Remedial Action Objectives
R1	Receiving water sampling point located 100 ft upstream
R2	Receiving water sampling point located 100 ft downstream
RDX	Research Department explosive
REA	Reanalysis
Redox	Reduction-oxidation reaction
REX	Resample
ROD	Record of Decision
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
S	Semi-annual
Scfm	Standard cubic feet per minute
SLs	Statistical Limits
SOP	Standard Operating Procedure
SOW	Statement of work
SPACT	Sample Planning and Chain of Custody Tracking
SPR	Spring
SRC	Source
STU	Solar-powered Treatment Unit
SVE	Soil Vapor Extraction
SVTS	Soil Vapor Treatment System
SVI	Soil Vapor Influent
SWEIS	Site-Wide Environmental Impact Statement
SWFS	Site Wide Feasibility Study
SWRI	Site-Wide Remedial Investigation
TBOS	Tetrabutyl orthosilicate
TCEP	tris (2-chloroethyl) phosphate
TFRT	Treatment Facility Real Time
THMs	Trihalomethanes
TKEBS	Tetrakis (2-ethylbutyl) silane
TCE	Trichloroethene
TDS	Total dissolved solids
TF	Treatment facility
TNB	Trinitrobenzene
TNT	Trinitrotoluene
Total-1,2-DCE	1,2-Dichloroethene (total)
TRV	Toxicity Reference Value
t-1,2-DCE	trans-1,2-Dichloroethene
$^{235}U/^{238}U$	Atom ratio of the isotopes uranium-235 and uranium-238
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
VC	Vinyl chloride
VCF4I	Fourth vapor phase granular activated carbon filter influent
VE	Vapor effluent
VES	Vapor extraction system
VI	Vapor influent

VOC	Volatile organic compound
WAA	waste accumulation area
WGMG	Water Guidance and Monitoring Group
WS	Water supply well
Y	Yes

Hydrogeologic Units

Lower $Tnbs_1$ = Lower member of the Neroly lower blue sandstone, below claystone marker bed (regional aquifer).
Qal = Quaternary alluvium.
Qls = Quaternary landslide.
Qt = Quaternary terrace.
Tmss = Miocene Cierbo Formation—lower siltstone/claystone member.
$Tnsc_{1a}$, $Tnsc_{1b}$, $Tnsc_{1c}$ = Sandstone bodies within the $Tnsc_1$ Neroly middle siltstone/claystone (1a = deepest).
$Tnbs_1$ = Lower member of the Neroly lower blue sandstone.
$Tnbs_0$ = Neroly silty sandstone.
$Tnbs_2$ = Miocene Neroly upper blue sandstone.
$Tnsc_0$ = Tertiary Neroly Formation—lower siltstone/claystone member.
$Tnsc_2$ = Miocene Neroly Formation—upper siltstone/claystone member.
Tps = Pliocene non-marine unit.
Tpsg = Miocene non-marine unit (gravel facies).
Tts = Tesla Formation.
$UTnbs_1$ = Upper member of the Neroly lower blue sandstone, above claystone marker bed.
WBR = Weathered bedrock.

Data Qualifier Flag Definitions

B = Analyte found in method blank, sample results should be evaluated.
D = Analysis performed at a secondary dilution or concentration (i.e., vapor samples).
E = The analyte was detected below the LLNL reporting limit, but above the analytical laboratory minimum detection limit.
F = Analyte found in field blank, trip blank, or equipment blank.
G = Quantitated using fuel calibration, but does not match typical fuel fingerprint.
H = Sample analyzed outside of holding time, sample results should be evaluated.
I = Surrogate recoveries were outside of QC limits.
J = Analyte was positively identified; the associated numerical value is the proximate concentration of the analyte in the sample.
L = Spike accuracy not within control limits.
O = Duplicate spike or sample precision not within control limits.
R = Sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
S = Analytical results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte cannot be verified.
T = Analyte is tentatively identified compound; result is approximate.

Requested Analyses

AS:UISO =	Uranium isotopes performed by alpha spectrometry.
DWMETALS:ALL =	Drinking water metals suite performed by various analytical methods.
E200.7:FE =	Iron performed by EPA Method 200.7.
E200.7:Li =	Lithium performed by EPA Method 200.7.
E200.7:SI =	Silica performed by EPA Method 200.7.
E200.8:AS =	Arsenic performed by EPA Method 200.8.
E200.8:CR =	Chromium performed by EPA Method 200.8.
E200.8:MN =	Manganese performed by EPA Method 200.8.
E200.8:SE =	Selenium performed by EPA Method 200.8.
E300.0:NO3 =	Nitrate performed by EPA Method 300.0.
E300.0:PERC =	Perchlorate performed by EPA Method 300.0.
E300.0:O-PO2 =	Orthophosphate performed by EPA Method 300.0.
E340.2:ALL =	Fluoride performed by EPA method 340.2.
E502.2:ALL =	Volatile organic compounds performed by EPA Method 502.2.
E601:ALL =	Halogenated volatile organic compounds performed by EPA Method 601.
E624:ALL =	Volatile organic compounds performed by EPA Method 624.
E8082A =	Polychlorinated biphenyls performed by EPA Method 8082A.
E8260:ALL =	Volatile organic compounds performed by EPA Method 8260.
E8330LOW:ALL =	High explosive compounds performed by EPA Method 8330.
E8330:R+H =	High explosive compounds RDX and HMX performed by EPA Method 8330.
E8330:TNT =	Trinitrotoluene performed by EPA Method 8330.
E906:ALL =	Tritium performed by EPA Method 906.
EM8015:DIESEL =	Diesel range organic compounds performed by modified EPA Method 8015.
GENMIN:ALL =	General minerals suite performed by various analytical methods.
MS:UISO =	Uranium isotopes performed by mass spectrometry.
T26METALS:ALL =	Title 26 metals.
TBOS:ALL =	Tetrabutylorthosilicate/ Tetrakis (2-ethylbutyl) silane.

Ground Water Elevation Table Notes

ABD = Abandoned.
AD = Drilling of adjacent new wells disturbed water level.
BLOC = Well Blocked.
BS = Water detected below bottom of screened interval.
CB = Installation completed as a Christy box.
DRY = No water detected in well casing at time of measurement.
FA = Flowing artesian well, water elevation converted.
FL = Flowing.
ME = Measuring error suspected.
MSL = Mean Sea Level.
MT = Measured twice.
NA = Information not available.
NM = Not Measured.
NOM = Not on field map.
PD = Predevelopment measurement.
PE = Pump Extraction.
PF = Pump not running at time of measurement.
PS = Measurement taken just before sampling.
PT = Pump test interfered with measurement.
RA = Restricted access.
UC = Unsafe conditions.
VE = Vacuum Extraction.
WE = Well equilibrium suspect.
WR = Well recovery.

Table Summ-1. Mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Volume of ground water treated (thousands of gal)	Volume of soil vapor treated (thousands of cf)	Estimated total VOC mass removed (g)	Estimated total perchlorate mass removed (g)	Estimated total nitrate mass removed (kg)	Estimated total RDX mass removed (g)	Estimated total TBOS/ TKEBS mass removed (g)	Estimated total Uranium mass removed (g)
CGSA GWTS	505	NA	120	NA	NA	NA	NA	NA
CGSA SVTS	NA	9,758	85	NA	NA	NA	NA	NA
834 GWTS	54	NA	300	NA	16	NA	0.077	NA
834 SVTS	NA	21,943	2,700	NA	NA	NA	NA	NA
815-SRC GWTS	421	NA	11	3.3	130	74	NA	NA
815-PRX GWTS	312	NA	16	8.9	97	NA	NA	NA
815-DSB GWTS	1,167	NA	30	NA	NA	NA	NA	NA
817-SRC GWTS	6	NA	0	0.66	1.8	0.95	NA	NA
817-PRX GWTS	261	NA	9.5	22	93	8.3	NA	NA
829-SRC GWTS	<1	NA	0.0097	0.011	0.077	NA	NA	NA
PIT7-SRC GWTS	47	NA	0.0029	2.0	7.0	NA	NA	17
854-SRC GWTS	562	NA	62	2.6	96	NA	NA	NA
854-SRC SVTS	NA	9,346	400	NA	NA	NA	NA	NA
854-PRX GWTS	153	NA	10	4.2	22	NA	NA	NA
854-DIS GWTS	5	NA	0.58	0.067	0.38	NA	NA	NA
832-SRC GWTS	38	NA	7.4	0.94	16	NA	NA	NA
832-SRC SVTS	NA	656	11	NA	NA	NA	NA	NA
830-SRC GWTS	1,217	NA	690	2.9	66	NA	NA	NA
830-SRC SVTS	NA	3,719	340	NA	NA	NA	NA	NA
830-DISS GWTS	333	NA	20	0	80	NA	NA	NA
Total	5,081	45,423	4,800	48	630	83	0.077	17

Notes:

815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
cf = Cubic feet.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
g = Grams.
gal = Gallons.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.

Nitrate re-injected into the Tnbs$_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit7 are overestimated.

Table Summ-2. Summary of cumulative remediation.

Treatment facility	Volume of ground water treated (thousands of gallons)	Volume of soil vapor treated (thousands of Cubic feet)	Estimated total VOC mass removed (kg)	Estimated total perchlorate mass removed (g)	Estimated total nitrate mass removed (kg)	Estimated total RDX mass removed (kg)	Estimated total TBOS/ TKEBS mass removed (kg)	Estimated total Uranium mass removed (kg)
EGSA GWTS	309,379	NA	7.6	NA	NA	NA	NA	NA
CGSA GWTS	24,754	NA	26	NA	NA	NA	NA	NA
CGSA SVTS	NA	173,274	77	NA	NA	NA	NA	NA
834 GWTS	1,247	NA	46	NA	310	NA	9.5	NA
834 SVTS	NA	387,881	340	NA	NA	NA	NA	NA
815-SRC GWTS*	7,037	NA	0.17	270	2,500	1.7	NA	NA
815-PRX GWTS*	8,281	NA	0.87	200	2,500	NA	NA	NA
815-DSB GWTS	17,241	NA	0.61	NA	NA	NA	NA	NA
817-SRC GWTS*	53	NA	0	5.4	17	0.0090	NA	NA
817-PRX GWTS*	4,433	NA	0.18	380	1,600	0.12	NA	NA
829-SRC GWTS	6	NA	0.00041	0.21	1.7	NA	NA	NA
PIT7-SRC GWTS	223	NA	0.0027	10	32	NA	NA	0.034
854-SRC GWTS	11,395	NA	5.8	160	2,100	NA	NA	NA
854-SRC SVTS	NA	110,917	12	NA	NA	NA	NA	NA
854-PRX GWTS	3,873	NA	0.68	160	640	NA	NA	NA
854-DIS GWTS	67	NA	0.0084	1.1	5.3	NA	NA	NA
832-SRC GWTS	893	NA	0.27	23	350	NA	NA	NA
832-SRC SVTS	NA	24,277	2.1	NA	NA	NA	NA	NA
830-SRC GWTS	12,238	NA	7.6	23	900	NA	NA	NA
830-SRC SVTS	NA	69,456	53	NA	NA	NA	NA	NA
830-PRXN GWTS	1,949	NA	0.26	NA	22	NA	NA	NA
830-DISS GWTS	8,428	NA	1.6	65	2,100	NA	NA	NA
Total	**411,498**	**765,805**	**580**	**1,300**	**13,000**	**1.8**	**9.5**	**0.034**

Notes:

815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
EGSA = Eastern General Services Area.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
PRXN = Proximal North.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.
Nitrate re-injected into the Tnbs$_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria. Nitrate mass removal is calculated assuming complete removal of nitrate from treated ground water. At Pit7, re-injected effluent may contain nitrate concentrations below the discharge limit but above the detection limit. Thus, nitrate mass removal calculations at Pit7 are overestimated.

Table 2.1-1. Central General Services Area (CGSA) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
CGSA	January	840	360	1,887	35,439
	February	672	360	1,557	63,105
	March	672	288	1,646	57,538
	April	648	264	1,569	54,893
	May	720	384	1,641	91,554
	June	648	648	1,457	202,752
Total		4,200	2,304	9,757	505,281

Table 2.1-2. General Services Area Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (μg/L)	PCE (μg/L)	cis-1,2-DCE (μg/L)	trans-1,2-DCE (μg/L)	Carbon tetra-chloride (μg/L)	Chloro-form (μg/L)	1,1-DCA (μg/L)	1,2-DCA (μg/L)	1,1-DCE (μg/L)	1,1,1-TCA (μg/L)	1,1,2-TCA (μg/L)	Freon 11 (μg/L)	Freon 113 (μg/L)	Vinyl chloride (μg/L)
CGSA-I	1/9/13	62	2.4	2	<0.5	<0.5	<0.5	<0.5	<0.5	0.63	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-I	4/8/13	53	2.9	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	0.69	<0.5	<0.5	0.58	<0.5	<0.5
CGSA-I	4/8/13 DUP	51	2.7	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	<0.5	0.53	<0.5	<0.5
CGSA-E	1/9/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	2/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	3/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	4/8/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	5/6/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CGSA-E	6/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-2 (Cont.). Analyte detected but not reported in main table.

Location	Date	Detection frequency	1,2-DCE (total) (μg/L)
CGSA-I	1/9/13	1 of 18	2.1
CGSA-I	4/8/13	1 of 18	1.4
CGSA-I	4/8/13 DUP	1 of 18	1.8
CGSA-E	1/9/13	0 of 18	–
CGSA-E	2/4/13	0 of 18	–
CGSA-E	3/4/13	0 of 18	–
CGSA-E	4/8/13	0 of 18	–
CGSA-E	5/6/13	0 of 18	–
CGSA-E	6/3/13	0 of 18	–

Notes:

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-3. Central General Services Area Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
CGSA GWTS			
Influent Port	**CGSA-I**	**VOCs**	**Quarterly**
		pH	**Quarterly**
Effluent Port	**CGSA-E**	**VOCs**	**Monthly**
		pH	**Monthly**
834 SVTS			
Influent Port	**CGSA-VI**	**No Monitoring Requirements**	
Effluent Port	**CGSA-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**CGSA-VCF4I**	**VOCs**	**Weekly[a]**

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CDF1	WS	LTnbs1	A	WGMG	E502.2:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	3		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CDF1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	A	WGMG	E502.2:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	3		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON1	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	A	WGMG	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	1	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	N	Inoperable pump.
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	2	Y	
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	3		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
CON2	WS	LTnbs1	M	CMP	E601:ALL	4		
W-26R-06	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-26R-06	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-26R-11	PTMW	Qal-Tnbs1	S	DIS	E601:ALL	2	Y	
W-35A-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	A	WGMG	E502.2:ALL	4		
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-05	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-05	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35A-07	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-07	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	2	Y	
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	3		
W-35A-08	GW	Qt-Tnsc1	Q	CMP	E601:ALL	4		
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-09	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-35A-10	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-35A-11	PTMW	LTnbs1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-35A-11	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-35A-12	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-12	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-13	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-35A-13	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	1	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	2	Y	
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	3		
W-35A-14	GW	Qt-Tnsc1	Q	CMP	E601:ALL	4		
W-7A	PTMW	UTnbs1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-7A	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7B	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7B	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7C	PTMW	UTnbs1	S	CMP	E601:ALL	2	N	Inoperable pump.
W-7C	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7DS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-7DS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-7E	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7E	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7ES	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7F	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7F	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7G	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7G	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7H	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7H	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7I	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7I	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7I	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7J	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-7J	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-7K	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7K	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7L	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7L	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7M	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-7M	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-7N	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-7N	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-7O	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7O	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E601:ALL	1	Y	
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E601:ALL	2	N	Insufficient water.
W-7P	EW	Qal-Tnbs1	S	DIS-TF	E601:ALL	3		
W-7P	EW	Qal-Tnbs1	S	CMP-TF	E601:ALL	4		
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	N	Dry.
W-7PS	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-7Q	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-7R	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-7R	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-7S	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-7T	PTMW	Qt-Tnsc1	S	DIS	E601:ALL	2	Y	
W-843-01	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-843-01	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-843-02	PTMW	UTnbs1	S	CMP	E601:ALL	2	Y	
W-843-02	PTMW	UTnbs1	S	CMP	E601:ALL	4		
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Dry.
W-872-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-872-02	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-872-02	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-873-01	PTMW	LTnbs1	S	CMP	E601:ALL	2	Y	
W-873-01	PTMW	LTnbs1	S	CMP	E601:ALL	4		
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-873-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-873-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-873-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-02	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-03	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-04	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-05	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-875-06	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water.
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Insufficient water.
W-875-07	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		

Table 2.1-4. General Services Area Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-875-07	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	Y	
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	Y	
W-875-08	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-08	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water.
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Dry.
W-875-09	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-09	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water.
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Dry.
W-875-10	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-10	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water.
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Dry.
W-875-11	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-11	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	1	N	Insufficient water.
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	2	N	Dry.
W-875-15	EW	Qt-Tnsc1	S	DIS-TF	E601:ALL	3		
W-875-15	EW	Qt-Tnsc1	S	CMP-TF	E601:ALL	4		
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-876-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-879-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-889-01	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Insufficient water.
W-CGSA-1732	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	N	Insufficient water.
W-CGSA-1733	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	N	Dry.
W-CGSA-1735	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-CGSA-1736	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	2	Y	
W-CGSA-1737	PTMW	Qal-Tnbs1	S	CMP	E601:ALL	4		
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-CGSA-1739	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		
W-CGSA-2708	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	2	Y	
W-CGSA-2708	PTMW	Qt-Tnsc1	S	CMP	E601:ALL	4		

Table 2.1-5. Central General Services Area (CGSA) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
CGSA	January	4.6	13	NA	NA	NA	NA
	February	3.8	18	NA	NA	NA	NA
	March	4.8	13	NA	NA	NA	NA
	April	4.9	13	NA	NA	NA	NA
	May	3.5	20	NA	NA	NA	NA
	June	64	45	NA	NA	NA	NA
Total		85	120	NA	NA	NA	NA

Table 2.2-1. Building 834 (834) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
834	January	0	0	0	0
	February	336	336	2,228	6,889
	March	648	648	4,379	11,749
	April	840	840	5,952	13,798
	May	696	696	4,974	11,598
	June	600	600	4,409	9,797
Total		3,120	3,120	21,942	53,831

Table 2.2-2. Building 834 Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (μg/L)	PCE (μg/L)	cis-1,2-DCE (μg/L)	trans-1,2-DCE (μg/L)	Carbon tetra-chloride (μg/L)	Chloro-form (μg/L)	1,1-DCA (μg/L)	1,2-DCA (μg/L)	1,1-DCE (μg/L)	1,1,1-TCA (μg/L)	1,1,2-TCA (μg/L)	Freon 11 (μg/L)	Freon 113 (μg/L)	Vinyl chloride (μg/L)
834-I	2/19/13	1,300 D	13 D	370 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D
834-I	4/3/13	1,700 D	15 D	270 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D	<2.5 D
834-I[a]	4/3/13 DUP	2,200 D	<50 D	330 D	<50 D	<50 D	<50 D	<50 D	<50 D	<50 D	<50 D	<50 D	<50 D	<50 D	<50 D
834-E	2/19/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	3/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	4/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	5/6/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
834-E	6/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] Duplicate sampling and analysis performed in April as part of QA/QC process.

No samples collected in January due to GWTS shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-2 (Cont.). Analyte detected but not reported in main table.

Location	Date	Detection frequency	1,2-DCE (total) (μg/L)
834-I	2/19/13	1 of 18	370 D
834-I	4/3/13	1 of 18	270 D
834-I[a]	4/3/13 DUP	1 of 18	330 D
834-E	2/19/13	0 of 18	–
834-E	3/4/13	0 of 18	–
834-E	4/3/13	0 of 18	–
834-E	5/6/13	0 of 18	–
834-E	6/3/13	0 of 18	–

Notes:

[a] Duplicate sampling and analysis performed in April as part of QA/QC process.

No samples collected in January due to GWTS shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-3. Building 834 Operable Unit diesel range organic compounds in ground water extraction and treatment system influent and effluent.

Location	Date	Diesel Range Organics (C12-C24) (μg/L)
834-I[a]	2/19/13	IR
834-I	4/3/13	<200
834-I[b]	4/3/13 DUP	–
834-E	2/19/13	<200
834-E	3/4/13	<200
834-E	4/3/13	<200
834-E	5/6/13	<200
834-E	6/3/13	<200

Notes:

[a] **Results rejected due to QA/QC problems.**

[b] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

No samples collected in January due to GWTS shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-4. Building 834 Operable Unit tetrabutyl orthosilicate/tetrakis (2-ethylbutyl) silane (TBOS/TKEBS) in ground water extraction and treatment system influent and effluent.

Location	Date	TBOS (μg/L)
834-I	2/19/13	38
834-I	4/3/13	<10
834-I[a]	4/3/13 DUP	<10
834-E	2/19/13	<10
834-E	3/4/13	<10
834-E	4/3/13	<10
834-E	5/6/13	<10
834-E	6/3/13	<10

Notes:

[a] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

No samples collected in January due to GWTS shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-5. Building 834 Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
834 GWTS			
Influent Port	**834-I**	**VOCs**	**Quarterly**
		TBOS/TKEBS	**Quarterly**
		Diesel	**Quarterly**
		pH	**Quarterly**
Effluent Port	**834-E**	**VOCs**	**Monthly**
		TBOS/TKEBS	**Monthly**
		Diesel	**Monthly**
		pH	**Monthly**
834 SVTS			
Influent Port	**834-VI**	**No Monitoring Requirements**	
Effluent Port	**834-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**834-VCF4I**	**VOCs**	**Weekly[a]**

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-1709	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1709	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1709	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1709	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-1711	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-1711	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-1711	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-1824	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-1824	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-1824	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1824	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1824	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1824	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-1825	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-1825	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-1825	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1825	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1825	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1825	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-1833	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-1833	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-1833	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-1833	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-1833	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-1833	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-2001	EW	Tps-Tnsc2	A	CMP-TF	E300.0:NO3	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	CMP-TF	E601:ALL	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	CMP-TF	E601:ALL	3		
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	E624:ALL	2	Y	
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	E624:ALL	4		
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	EM8015:DIESEL	1	Y	
W-834-2001	EW	Tps-Tnsc2	S	DIS-TF	EM8015:DIESEL	3		
W-834-2001	EW	Tps-Tnsc2	A	CMP-TF	TBOS:ALL	1	Y	
W-834-2001	EW	Tps-Tnsc2	A	DIS-TF	TBOS:ALL	3		
W-834-2113	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2113	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2113	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-2113	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-2117	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2117	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2117	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-2117	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-2118	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-2118	PTMW	Tpsg	S	DIS	E300.0:PERC	1	Y	
W-834-2118	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-2118	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-2118	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-2119	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-2119	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-2119	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-2119	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-A1	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-A1	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-A1	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	
W-834-A2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-A2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-A2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-A2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-B2	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-B2	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-B2	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-B2	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-B2	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-B2	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-B2	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-B3	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-B3	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-B3	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-B3	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-B3	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-B3	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-B3	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-B4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-B4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-B4	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-B4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-C2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-C2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-C2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-C4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-C4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-C4	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C4	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-C5	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-C5	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-C5	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-C5	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D2	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D2	PTMW	LTnbs1	A	CMP	E601:ALL	1	N	Dry.
W-834-D2	PTMW	LTnbs1	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D3	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D3	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D3	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D4	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D4	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D4	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-D4	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D4	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D4	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D4	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D5	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D5	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D5	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D5	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D6	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D6	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D6	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D6	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D6	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D6	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D6	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D7	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D7	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D7	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D7	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D7	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D7	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D7	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D9A	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D9A	PTMW	Tnbs2	A	CMP	E601:ALL	1	N	Dry.
W-834-D9A	PTMW	Tnbs2	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-D10	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-D10	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D11	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-D11	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-D11	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D11	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-D12	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D12	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D12	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D12	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D12	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D12	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D12	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D13	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-D13	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-D13	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-D13	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-D13	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-D13	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-D13	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-D14	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D14	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D14	PTMW	Tpsg	S	CMP	E601:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-D14	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D15	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-D15	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-D15	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D15	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-D16	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D16	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D16	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D16	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D17	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-D17	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-D17	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D17	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-D18	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-D18	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-D18	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-D18	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Insufficient water.
W-834-G3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-G3	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-834-G3	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-H2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-H2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-H2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-H2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-J1	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-J1	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-J1	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-J1	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-J1	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-J1	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-J1	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-J2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-J2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-J2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-J2	PTMW	Tpsg	A	CMP	TBOS:ALL	1	Y	
W-834-J3	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-J3	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-J3	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-J3	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-K1A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-K1A	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-K1A	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-K1A	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-M1	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-M1	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-M1	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-M1	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-M2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-M2	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-M2	PTMW	Tpsg	S	CMP	E601:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-M2	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-S1	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S1	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S1	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-S1	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S1	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-S1	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S1	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S10	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S10	PTMW	Tpsg	S	CMP	E624:ALL	1	N	Dry.
W-834-S10	PTMW	Tpsg	S	CMP	E624:ALL	3		
W-834-S10	PTMW	Tpsg	A	CMP	TBOS:ALL	1	N	Dry.
W-834-S12A	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S12A	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S12A	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-S12A	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S12A	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-S12A	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S12A	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S13	EW	Tpsg	A	CMP-TF	E300.0:NO3	1	Y	
W-834-S13	EW	Tpsg	S	CMP-TF	E601:ALL	1	Y	
W-834-S13	EW	Tpsg	S	DIS-TF	E601:ALL	2	Y	
W-834-S13	EW	Tpsg	S	CMP-TF	E601:ALL	3		
W-834-S13	EW	Tpsg	S	DIS-TF	E601:ALL	4		
W-834-S13	EW	Tpsg	A	CMP-TF	TBOS:ALL	1	Y	
W-834-S13	EW	Tpsg	A	DIS-TF	TBOS:ALL	3		
W-834-S4	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-S4	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-S4	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S4	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-S5	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S5	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S5	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S5	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-S6	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-834-S6	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Insufficient water.
W-834-S6	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S6	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-S7	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-S7	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-S7	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-S8	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-S8	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-S8	PTMW	Tps-Tnsc2	O	DIS	EM8015:DRANGE	1	Y	
W-834-S8	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-S9	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-S9	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-T1	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-834-T1	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-834-T1	GW	LTnbs1	Q	CMP	E601:ALL	4		
W-834-T1	GW	LTnbs1	S	CMP	TBOS:ALL	1	Y	
W-834-T1	GW	LTnbs1	S	CMP	TBOS:ALL	3		
W-834-T11	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T11	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T11	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T11	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-T2	PTMW	Tpsg	A	DIS	E200.7:FE	1	Y	
W-834-T2	PTMW	Tpsg	A	DIS	E200.8:MN	1	Y	
W-834-T2	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2	PTMW	Tpsg	O	CMP	TBOS:ALL	1	Y	
W-834-T2A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2A	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2A	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2A	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-T2B	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T2B	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T2B	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2B	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-T2C	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T2C	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T2C	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2C	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-T2D	PTMW	Tpsg	A	CMP	E300.0:NO3	1	Y	
W-834-T2D	PTMW	Tpsg	S	CMP	E601:ALL	1	Y	
W-834-T2D	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T2D	PTMW	Tpsg	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	E300.0:NO3	3		
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-834-T3	GW	LTnbs1	Q	CMP	E601:ALL	4		
W-834-T3	GW	LTnbs1	S	CMP	TBOS:ALL	1	Y	
W-834-T3	GW	LTnbs1	S	CMP	TBOS:ALL	3		
W-834-T5	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-T5	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	Y	
W-834-T5	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		
W-834-T5	PTMW	Tps-Tnsc2	E	CMP	TBOS:ALL	1	N	To be sampled in 2014.
W-834-T7A	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T7A	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	1	N	Dry.
W-834-T7A	PTMW	Tps-Tnsc2	S	CMP	E601:ALL	3		

Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-834-T7A	PTMW	Tps-Tnsc2	O	CMP	TBOS:ALL	1	N	Dry.
W-834-T8A	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T8A	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T8A	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T8A	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-T9	PTMW	Tpsg	A	CMP	E300.0:NO3	1	N	Dry.
W-834-T9	PTMW	Tpsg	S	CMP	E601:ALL	1	N	Dry.
W-834-T9	PTMW	Tpsg	S	CMP	E601:ALL	3		
W-834-T9	PTMW	Tpsg	O	CMP	TBOS:ALL	1	N	Dry.
W-834-U1	PTMW	Tps-Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	S	CMP	E624:ALL	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	S	CMP	E624:ALL	3		
W-834-U1	PTMW	Tps-Tnsc2	A	DIS	EM8015:DIESEL	1	Y	
W-834-U1	PTMW	Tps-Tnsc2	A	CMP	TBOS:ALL	1	Y	

Table 2.2-7. Building 834 (834) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
834	January	0	0	NA	0	NA	0
	February	470	61	NA	1.7	NA	0.077
	March	390	75	NA	3.6	NA	0
	April	520	67	NA	4.3	NA	0
	May	680	55	NA	3.6	NA	0
	June	620	46	NA	3.0	NA	0
Total		2,700	300	NA	16	NA	0.077

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
BC6-10	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
BC6-10	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E601:ALL	3		
BC6-10	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
BC6-10	PTMW	LTnbs1	S	CMP	E906:ALL	3		
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E601:ALL	1	N	To be sampled in 2014.
BC6-13	PTMW	Qt-Tnbs1	E	CMP	E906:ALL	1	N	To be sampled in 2014.
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E624:ALL	4		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	1	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	2	Y	
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	3		
CARNRW1	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	AS:UISO	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E502.2:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	E900:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	1	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	2	Y	
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	3		
CARNRW2	WS	Qt-Tnbs1	Q	WGMG	WGMGMET3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW3	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:NO3	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E300.0:PERC	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E601:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	1	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	2	Y	
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	3		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
CARNRW4	WS	Qt-Tnbs1	M	CMP	E906:ALL	4		
EP6-06	DMW	LTnbs1	A	WGMG	AS:UISO	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E300.0:NO3	1	Y	
EP6-06	DMW	LTnbs1	A	WGMG	E300.0:PERC	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E8260:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E8260:ALL	3		
EP6-06	DMW	LTnbs1	A	WGMG	E900:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E906:ALL	1	Y	
EP6-06	DMW	LTnbs1	S	WGMG	E906:ALL	3		
EP6-06	DMW	LTnbs1	A	WGMG	METROSURV:ALL	1	Y	
EP6-07	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
EP6-07	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
EP6-07	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
EP6-07	PTMW	LTnbs1	S	CMP	E601:ALL	3		
EP6-07	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
EP6-07	PTMW	LTnbs1	S	CMP	E906:ALL	3		
EP6-08	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	N	Dry.

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	3		
EP6-08	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	N	Dry.
EP6-08	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
EP6-08	DMW	Qt-Tnbs1	A	WGMG	METROSURV:ALL	1	N	Dry.
EP6-09	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	3		
EP6-09	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
EP6-09	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
EP6-09	DMW	Qt-Tnbs1	A	WGMG	METROSURV:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-01	DMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-01	DMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-01	DMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-01S	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	3		
K6-01S	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
K6-01S	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-01S	DMW	Qt-Tnbs1	A	WGMG	METROSURV:ALL	1	Y	
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-03	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-04	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Inoperable pump.
K6-04	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-14	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-14	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-14	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-14	PTMW	LTnbs1	S	CMP	E906:ALL	3		

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-15	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-15	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-15	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-16	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-16	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-16	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-16	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
K6-17	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	2	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E601:ALL	4		
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-17	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-18	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
K6-18	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-18	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-18	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-19	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	Y	
K6-19	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	3		
K6-19	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	Y	
K6-19	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-19	DMW	Qt-Tnbs1	A	WGMG	METROSURV:ALL	1	Y	
K6-21	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E601:ALL	1	N	Dry.
K6-21	PTMW	LTnbs1	A	CMP	E906:ALL	1	N	Dry.
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
K6-22	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	2	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E601:ALL	4		
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
K6-22	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
K6-23	PTMW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
K6-23	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
K6-23	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-24	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-24	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-24	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-25	PTMW	Tmss	A	CMP	E300.0:NO3	1	N	Inoperable pump.
K6-25	PTMW	Tmss	A	CMP	E300.0:PERC	1	N	Inoperable pump.
K6-25	PTMW	Tmss	S	CMP	E601:ALL	1	N	Inoperable pump.
K6-25	PTMW	Tmss	S	CMP	E601:ALL	3		
K6-25	PTMW	Tmss	S	CMP	E906:ALL	1	N	Inoperable pump.
K6-25	PTMW	Tmss	S	CMP	E906:ALL	3		
K6-26	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-26	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-26	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-27	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-27	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-27	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-27	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-27	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-27	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-32	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-32	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-32	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-33	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	N	Dry.
K6-33	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	N	Dry.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	N	Dry.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	N	Dry.
K6-33	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
K6-34	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K6-34	GW	LTnbs1	S	CMP	E300.0:NO3	3		
K6-34	GW	LTnbs1	S	CMP	E300.0:PERC	1	Y	
K6-34	GW	LTnbs1	S	CMP	E300.0:PERC	3		
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	3		
K6-34	GW	LTnbs1	Q	CMP	E601:ALL	4		
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	1	Y	
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	2	Y	
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	3		
K6-34	GW	LTnbs1	Q	CMP	E906:ALL	4		
K6-35	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
K6-35	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
K6-35	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
K6-35	PTMW	LTnbs1	S	CMP	E601:ALL	3		
K6-35	PTMW	LTnbs1	S	CMP	E906:ALL	1	Y	
K6-35	PTMW	LTnbs1	S	CMP	E906:ALL	3		
K6-36	DMW	Qt-Tnbs1	A	WGMG	AS:UISO	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E160.1:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E300.0:NO3	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	A	WGMG	E300.0:PERC	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E8260:ALL	3		
K6-36	DMW	Qt-Tnbs1	A	WGMG	E900:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	1	N	Dry.
K6-36	DMW	Qt-Tnbs1	S	WGMG	E906:ALL	3		
K6-36	DMW	Qt-Tnbs1	A	WGMG	METROSURV:ALL	1	N	Dry.
W-33C-01	PTMW	Tts	A	CMP	E300.0:NO3	1	Y	
W-33C-01	PTMW	Tts	A	CMP	E300.0:PERC	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E601:ALL	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E601:ALL	3		
W-33C-01	PTMW	Tts	S	CMP	E906:ALL	1	Y	
W-33C-01	PTMW	Tts	S	CMP	E906:ALL	3		
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:NO3	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E300.0:PERC	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E601:ALL	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	O	CMP	E906:ALL	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS	1	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS	2	N	Dry.
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS	3		
SPRING15	SPR	Qt-Tnbs1	Q	WGMG	NUTRIENTS	4		
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:NO3	3		
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	S	CMP	E300.0:PERC	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	1	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	2	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E601:ALL	4		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	1	Y	

Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	2	Y	
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	3		
W-PIT6-1819	GW	Qt-Tnbs1	Q	CMP	E906:ALL	4		
W-PIT6-2816	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
W-PIT6-2816	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		
W-PIT6-2817	PTMW	Qt-Tnbs1	A	CMP	E300.0:NO3	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	A	CMP	E300.0:PERC	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E601:ALL	3		
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	1	Y	
W-PIT6-2817	PTMW	Qt-Tnbs1	S	CMP	E906:ALL	3		

Table 2.3-2. Pit 6 Landfill Detection Monitoring constituents of concern (VOCs and tritium only), detection monitoring wells, Statistical Limits (SLs), Maximum Contaminant Level (MCLs), and analytical results for First Semester 2013.

Constituents of Concern	Well	MCL	SL	1/7/13	1/8/13 DUP	1/8/13	1/10/13
Tritium (pCi/L)	EP6-06	20000	100	-	-	<100	-
	EP6-07	20000	141	<100	-	-	-
	EP6-09	20000	138	-	-	-	<100
	K6-01S	20000	167	-	-	<100	-
	K6-19	20000	317	-	165 ± 92	271 ± 106	-
	K6-35	20000	157	<100	-	-	-
Chloroform (µg/L)	EP6-06	80	0.5	-	-	<0.5	-
	EP6-07	80	-	<0.5	-	-	-
	EP6-09	80	0.5	-	-	-	<0.5
	K6-01S	80	0.5	-	-	<0.5	-
	K6-19	80	1.5	-	<0.5	<0.5	-
	K6-35	80	-	<0.5	-	-	-
1,2-Dichloroethane (µg/L)	EP6-06	0.5	0.5	-	-	<0.5	-
	EP6-07	0.5	-	<0.5	-	-	-
	EP6-09	0.5	0.5	-	-	-	<0.5
	K6-01S	0.5	0.5	-	-	<0.5	-
	K6-19	0.5	0.5	-	<0.5	<0.5	-
	K6-35	0.5	-	<0.5	-	-	-
cis-1,2-Dichloroethene (µg/L)	EP6-06	6	0.5	-	-	<0.5	-
	EP6-07	6	-	<0.5	-	-	-
	EP6-09	6	0.5	-	-	-	<0.5
	K6-01S	6	7	-	-	2.4	-
	K6-19	6	0.5	-	<0.5	<0.5	-
	K6-35	6	-	<0.5	-	-	-
Methylene chloride (µg/L)	EP6-06	5	1	-	-	<1	-
	EP6-07	5	-	<1	-	-	-
	EP6-09	5	1	-	-	-	<1
	K6-01S	5	1	-	-	<1	-
	K6-19	5	1	-	<1	<1	-
	K6-35	5	-	<0.5	-	-	-
Tetrachloroethene (µg/L)	EP6-06	5	0.5	-	-	<0.5	-
	EP6-07	5	-	<0.5	-	-	-
	EP6-09	5	0.5	-	-	-	<0.5
	K6-01S	5	0.5	-	-	<0.5	-
	K6-19	5	0.5	-	<0.5	<0.5	-
	K6-35	5	-	<0.5	-	-	-
1,1,1-Trichloroethane (µg/L)	EP6-06	200	0.5	-	-	<0.5	-
	EP6-07	200	-	<0.5	-	-	-
	EP6-09	200	0.5	-	-	-	<0.5
	K6-01S	200	0.5	-	-	<0.5	-
	K6-19	200	0.5	-	<0.5	<0.5	-
	K6-35	200	-	<0.5	-	-	-

Table 2.3-2 (Con't.). Pit 6 Landfill Detection Monitoring constituents of concern (VOCs and tritium only), detection monitoring wells, Statistical Limits (SLs), Maximum Contaminant Level (MCLs), and analytical results for First Semester 2013.

Constituents of Concern	Well	MCL	SL	1/7/13	1/8/13 DUP	1/8/13	1/10/13
Trichloroethene (TCE) (µg/L)	EP6-06	5	0.5	-	-	<0.5	-
	EP6-07	5	-	<0.5	-	-	-
	EP6-09	5	17	-	-	-	5.8
	K6-01S	5	1.5	-	-	<0.5	-
	K6-19	5	13	-	2.9	2.9	-
	K6-35	5	-	<0.5	-	-	-

Table 2.3-3. Pit 6 Landfill detection monitoring physical parameters for First Semester 2013.

Location	Date	Field Temperature (Degrees C)	Field pH (Units)	Field Specific Conductance (µmhos/cm)	Total dissolved solids (TDS) (mg/L)
EP6-06	1/8/13	20.1	7.62	1,284	800 D
EP6-07	1/7/13	20.6	7.69	1,071	-
EP6-09	1/10/13	21	7.56	1,649	1,100 D
K6-01	1/7/13	17.4	7.46	1,648	-
K6-01S	1/8/13	21.7	7.06	3,590	2,800 D
K6-19	1/8/13	21.4	7.48	1,202	760 D
K6-19	1/8/13 DUP	-	-	-	730 D
K6-35	1/7/13	21.1	7.76	1,041	-

Table 2.4-1. Building 815-Source (815-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-SRC	January	NA	788	NA	78,845
	February	NA	670	NA	76,051
	March	NA	611	NA	68,668
	April	NA	818	NA	88,207
	May	NA	698	NA	75,400
	June	NA	479	NA	33,538
Total		NA	4,064	NA	420,709

Table 2.4-2. Building 815-Proximal (815-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-PRX	January	NA	0	NA	0
	February	NA	0	NA	2
	March	NA	499	NA	69,767
	April	NA	841	NA	99,092
	May	NA	704	NA	77,788
	June	NA	629	NA	64,929
Total		NA	2,673	NA	311,578

Table 2.4-3. Building 815-Distal Site Boundary (815-DSB) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
815-DSB	January	NA	840	NA	235,904
	February	NA	672	NA	181,365
	March	NA	607	NA	170,836
	April	NA	712	NA	204,188
	May	NA	720	NA	200,054
	June	NA	645	NA	175,125
Total		NA	4,196	NA	1,167,472

Table 2.4-4. Building 817-Source (817-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
817-SRC	January	NA	0	NA	0
	February	NA	4	NA	272
	March	NA	24	NA	1,389
	April	NA	30	NA	1,625
	May	NA	26	NA	1,361
	June	NA	22	NA	1,080
Total		NA	106	NA	5,727

Table 2.4-5. Building 817-Proximal (817-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
817-PRX	January	NA	49	NA	7,799
	February	NA	562	NA	64,636
	March	NA	626	NA	73,810
	April	NA	830	NA	89,915
	May	NA	179	NA	18,839
	June	NA	50	NA	5,735
Total		NA	2,296	NA	260,734

Table 2.4-6. Building 829-Source (829-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
829-SRC	January	NA	0	NA	0
	February	NA	0	NA	0
	March	NA	0	NA	0
	April	NA	0	NA	0
	May	NA	325	NA	154
	June	NA	318	NA	157
Total		NA	643	NA	311

Table 2.4-7. High Explosives Process Area Operable Unit Volatile Organic Compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (μg/L)	PCE (μg/L)	cis-1,2-DCE (μg/L)	trans-1,2-DCE (μg/L)	Carbon tetra-chloride (μg/L)	Chloro-form (μg/L)	1,1-DCA (μg/L)	1,2-DCA (μg/L)	1,1-DCE (μg/L)	1,1,1-TCA (μg/L)	1,1,2-TCA (μg/L)	Freon 11 (μg/L)	Freon 113 (μg/L)	Vinyl chloride (μg/L)
Building 815-Distal Site Boundry															
815-DSB-I	**1/8/13**	**6.7**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-I	**4/3/13**	**6.6**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-I[a]	**4/3/13 DUP**	**12**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**1**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**1/8/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**2/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**3/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**4/3/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**5/6/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-DSB-E	**6/3/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Building 815-Proximal[b]															
815-PRX-I	**3/5/13**	**22**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-I	**4/8/13**	**27**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-I[a]	**4/8/13 DUP**	**26**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**3/5/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**4/8/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**5/6/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-PRX-E	**6/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Building 815-Source															
815-SRC-I	**1/23/13**	**5.7**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**0.55**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-I	**4/3/13**	**6.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**0.62**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-I[a]	**4/3/13 DUP**	**6.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**0.8**	**<0.5**	**<0.5**	**<1**	**<2**	**<0.5**
815-SRC-E	**1/23/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**2/5/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**3/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**4/3/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**5/6/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
815-SRC-E	**6/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**

Table 2.4-7 (Cont.). High Explosives Process Area Operable Unit Volatile Organic Compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (μg/L)	PCE (μg/L)	cis-1,2-DCE (μg/L)	trans-1,2-DCE (μg/L)	Carbon tetra-chloride (μg/L)	Chloro-form (μg/L)	1,1-DCA (μg/L)	1,2-DCA (μg/L)	1,1-DCE (μg/L)	1,1,1-TCA (μg/L)	1,1,2-TCA (μg/L)	Freon 11 (μg/L)	Freon 113 (μg/L)	Vinyl chloride (μg/L)
***Building 817-Proximal*[c]**															
817-PRX-I	1/24/13	8.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-I	4/2/13	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-I[a]	4/2/13 DUP	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	1/24/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	2/5/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	3/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	4/2/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-PRX-E	5/6/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
***Building 817-Source*[d]**															
817-SRC-I	2/25/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-I	4/2/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-I[a]	4/2/13 DUP	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	2/25/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	3/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	4/2/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	5/6/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
817-SRC-E	6/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
***Building 829-Source*[e]**															
829-SRC-I	3/25/13	3.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-I	5/20/13	13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-I	5/28/13	12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-I	6/10/13	13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-I[a]	6/10/13 DUP	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-E	5/20/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-E	5/28/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
829-SRC-E	6/10/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes appear on the following page.

Table 2.4-7 (Cont.). High Explosives Process Area Operable Unit Volatile Organic Compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Notes:

[a] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

[b] **No compliance monitoring conducted in January or February due to system shutdown for freeze protection.**

[c] **No compliance monitoring conducted in June due to system shutdown after Effluent detection of perchlorate in May.**

[d] **No compliance monitoring conducted in January due to system shutdown for freeze protection.**

[e] **System operated in testing mode all quarter due to internal system contamination related to treatment media vessels.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-7 (Cont.). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 815-Distal Site Boundry		
815-DSB-I	**1/8/13**	**0 of 18**
815-DSB-I	**4/3/13**	**0 of 18**
815-DSB-I[a]	**4/3/13 DUP**	**0 of 18**
815-DSB-E	**1/8/13**	**0 of 18**
815-DSB-E	**2/4/13**	**0 of 18**
815-DSB-E	**3/4/13**	**0 of 18**
815-DSB-E	**4/3/13**	**0 of 18**
815-DSB-E	**5/6/13**	**0 of 18**
815-DSB-E	**6/3/13**	**0 of 18**
Building 815-Proximal[b]		
815-PRX-I	**3/5/13**	**0 of 18**
815-PRX-I	**4/8/13**	**0 of 18**
815-PRX-I[a]	**4/8/13 DUP**	**0 of 18**
815-PRX-E	**3/5/13**	**0 of 18**
815-PRX-E	**4/8/13**	**0 of 18**
815-PRX-E	**5/6/13**	**0 of 18**
815-PRX-E	**6/4/13**	**0 of 18**
Building 815-Source		
815-SRC-I	**1/23/13**	**0 of 18**
815-SRC-I	**4/3/13**	**0 of 18**
815-SRC-I[a]	**4/3/13 DUP**	**0 of 18**
815-SRC-E	**1/23/13**	**0 of 18**
815-SRC-E	**2/5/13**	**0 of 18**
815-SRC-E	**3/4/13**	**0 of 18**
815-SRC-E	**4/3/13**	**0 of 18**
815-SRC-E	**5/6/13**	**0 of 18**
815-SRC-E	**6/4/13**	**0 of 18**
Building 817-Proximal[c]		
817-PRX-I	**1/24/13**	**0 of 18**
817-PRX-I	**4/2/13**	**0 of 18**
817-PRX-I[a]	**4/2/13 DUP**	**0 of 18**
817-PRX-E	**1/24/13**	**0 of 18**
817-PRX-E	**2/5/13**	**0 of 18**
817-PRX-E	**3/4/13**	**0 of 18**
817-PRX-E	**4/2/13**	**0 of 18**
817-PRX-E	**5/6/13**	**0 of 18**

Table 2.4-7 (Cont.). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 817-Source[d]		
817-SRC-I	**2/25/13**	**0 of 18**
817-SRC-I	**4/2/13**	**0 of 18**
817-SRC-I[a]	**4/2/13 DUP**	**0 of 18**
817-SRC-E	**2/25/13**	**0 of 18**
817-SRC-E	**3/4/13**	**0 of 18**
817-SRC-E	**4/2/13**	**0 of 18**
817-SRC-E	**5/6/13**	**0 of 18**
817-SRC-E	**6/4/13**	**0 of 18**
Building 829-Source[e]		
829-SRC-I	**3/25/13**	**0 of 18**
829-SRC-I	**5/20/13**	**0 of 18**
829-SRC-I	**5/28/13**	**0 of 18**
829-SRC-I	**6/10/13**	**0 of 18**
829-SRC-I[a]	**6/10/13 DUP**	**0 of 18**
829-SRC-E	**5/20/13**	**0 of 18**
829-SRC-E	**5/28/13**	**0 of 18**
829-SRC-E	**6/10/13**	**0 of 18**

Notes:

[a] Duplicate sampling and analysis performed in April as part of QA/QC process.

[b] No compliance monitoring conducted in January or February due to system shutdown for freeze protection.

[c] No compliance monitoring conducted in June due to system shutdown after Effluent detection of perchlorate in May.

[d] No compliance monitoring conducted in January due to system shutdown for freeze protection.

[e] System operated in testing mode all quarter due to internal system contamination related to treatment media vessels.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-8. High Explosives Process Area Operable Unit nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate (as NO3) (mg/L)	Perchlorate (μg/L)
Building 815-Distal Site Boundry[a]			
815-DSB-I	**1/8/13**	**<0.5**	**–**
815-DSB-I	**4/3/13**	**<1 D**	**–**
815-DSB-I	**4/3/13 DUP**	**<0.5**	**–**
Building 815-Proximal[b,c]			
815-PRX-I	**3/5/13**	**–**	**6.3**
815-PRX-I	**4/8/13**	**–**	**5.5**
815-PRX-I[d]	**4/8/13 DUP**	**–**	**5.8**
815-PRX-E	**3/5/13**	**–**	**<4**
815-PRX-E	**4/8/13**	**–**	**<4**
815-PRX-E	**5/6/13**	**–**	**<4**
815-PRX-E	**6/4/13**	**–**	**<4**
Building 815-Source[b]			
815-SRC-I	**1/23/13**	**–**	**4.7**
815-SRC-I	**4/3/13**	**–**	**5.5**
815-SRC-I[d]	**4/3/13 DUP**	**–**	**6.2**
815-SRC-E	**1/23/13**	**–**	**<4**
815-SRC-E	**2/5/13**	**–**	**<4**
815-SRC-E	**3/4/13**	**–**	**<4**
815-SRC-E	**4/3/13**	**–**	**<4**
815-SRC-E	**5/6/13**	**–**	**<4**
815-SRC-E	**6/4/13**	**–**	**<4**
Building 817-Proximal[b,e]			
817-PRX-I	**1/24/13**	**–**	**22 D**
817-PRX-I	**4/2/13**	**–**	**18**
817-PRX-I[d]	**4/2/13 DUP**	**–**	**18**
817-PRX-E	**1/24/13**	**–**	**<4**
817-PRX-E	**2/5/13**	**–**	**<4**
817-PRX-E	**3/4/13**	**–**	**<4**
817-PRX-E	**4/2/13**	**–**	**<4**
817-PRX-E	**5/6/13**	**–**	**5.6**
817-PRX-E	**5/28/13**	**–**	**8**
817-PRX-E	**5/29/13**	**–**	**<4**
817-PRX-E	**6/5/13**	**–**	**<4**
817-PRX-E	**6/12/13**	**–**	**<4**
817-PRX-E	**6/12/13**	**–**	**<4**

Table 2.4-8 (Cont.). High Explosives Process Area Operable Unit nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate (as NO3) (mg/L)	Perchlorate (μg/L)
Building 817-Source[b]			
817-SRC-I	**2/25/13**	**85**	**31 D**
817-SRC-I	**4/2/13**	**–**	**30 D**
817-SRC-I[d]	**4/2/13 DUP**	**–**	**30 D**
817-SRC-E	**2/25/13**	**–**	**<4**
817-SRC-E	**3/4/13**	**–**	**<4**
817-SRC-E	**4/2/13**	**–**	**<4**
817-SRC-E	**5/6/13**	**–**	**<4**
817-SRC-E	**6/4/13**	**–**	**<4**
Building 829-Source[f]			
829-SRC-I	**3/25/13**	**55 D**	**8.3**
829-SRC-I	**6/10/13**	**75 D**	**11**
829-SRC-I[d]	**6/10/13 DUP**	**69 D**	**11**
829-SRC-E	**6/10/13**	**<2.5 D**	**<4 L**

Notes:

[a] No nitrate or perchlorate monitoring required; nitrate measured for trend analysis only.

[b] No nitrate monitoring required.

[c] No compliance monitoring conducted in January or February due to system shutdown for freeze protection.

[d] Duplicate sampling and analysis performed in April as part of QA/QC process.

[e] Additional compliance monitoring conducted due to detection of perchlorate in effluent samples collected on May 6 and 8, 2013.

[f] System operated in testing mode all quarter due to internal system contamination related to treatment media vessels.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-9. High Explosives Process Area Operable Unit high explosive compounds in ground water extraction and treatment system influent and effluent.

Location	Date	1,3,5-TNB (µg/L)	1,3-DNB (µg/L)	2,4-DNT (µg/L)	2,6-DNT (µg/L)	2-Amino-4,6- DNT (µg/L)	2-NT (µg/L)	3-NT (µg/L)	4-Amino-2,6- DNT (µg/L)	4-NT (µg/L)	HMX (µg/L)	NB (µg/L)	RDX (µg/L)	TNT (µg/L)
Building 815-Distal Site Boundry[a]		–	–	–	–	–	–	–	–	–	–	–	–	–
Building 815-Proximal[b]														
815-PRX-E	**3/5/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
815-PRX-E	**4/8/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
Building 815-Source														
815-SRC-I	**1/23/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**5**	**<2**	**37**	**<2**
815-SRC-I	**4/3/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**5.4**	**<2**	**38**	**<2**
815-SRC-I[c]	**4/3/13 DUP**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**4.9**	**<1**	**9.3**	**<1**	**37**	**<1**
815-SRC-E	**1/23/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
815-SRC-E	**2/5/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
815-SRC-E	**3/4/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
815-SRC-E	**4/3/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
815-SRC-E	**5/6/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
815-SRC-E	**6/4/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
Building 817-Proximal[d]														
817-PRX-I	**1/24/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**3.7**	**<2**	**10**	**<2**
817-PRX-I	**4/2/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**6.2**	**<2**
817-PRX-I[c]	**4/2/13 DUP**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**8**	**<2**
817-PRX-E	**1/24/13**	**<2 D**	**<2 D**	**<2 D**	**<2 D**	**<2 D**	**<2 D**	**<2 D**	**<2 D**	**<2 D**	**<1 D**	**<2 D**	**<1 D**	**<2 D**
817-PRX-E	**2/5/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
817-PRX-E	**3/4/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
817-PRX-E	**4/2/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**
817-PRX-E	**5/6/13**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<1**	**<2**	**<1**	**<2**

Table 2.4-9 (Cont.). High Explosives Process Area Operable Unit high explosive compounds in ground water extraction and treatment system influent and effluent.

Location	Date	1,3,5-TNB (µg/L)	1,3-DNB (µg/L)	2,4-DNT (µg/L)	2,6-DNT (µg/L)	2-Amino-4,6- DNT (µg/L)	2-NT (µg/L)	3-NT (µg/L)	4-Amino-2,6- DNT (µg/L)	4-NT (µg/L)	HMX (µg/L)	NB (µg/L)	RDX (µg/L)	TNT (µg/L)
Building 817-Source[e]														
817-SRC-I	2/25/13	<2	<2	<2	<2	<2	<2	<2	<2	<2	23	<2	44	<2
817-SRC-I	4/2/13	<2	<2	<2	<2	<2	<2	<2	<2	<2	10	<2	24	<2
817-SRC-I[c]	4/2/13 DUP	<2	<2	<2	<2	<2	<2	<2	<2	<2	19	<2	44	<2
817-SRC-E	2/25/13	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	3/4/13	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	4/2/13	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	5/6/13	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
817-SRC-E	6/4/13	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2
Building 829-Source[a]														

Notes:

[a] **No high explosive compound monitoring required.**

[b] **No influent and only quarterly effluent high explosive monitoring required.**

[c] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

[d] **No compliance samples collected in June due to system evaluation after perchlorate detections in May.**

[e] **No compliance monitoring conducted in January due to system shutdown for freeze protection.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-10. High Explosives Process Area Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
815-SRC GWTS			
Influent Port	**815-SRC-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**815-SRC-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
815-PRX GWTS			
Influent Port	**815-PRX-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**815-PRX-E**	**VOCs**	**Monthly**
		HE Compounds	**Quarterly**
		Perchlorate	**Monthly**
		pH	**Monthly**
815-DSB GWTS			
Influent Port	**815-DSB-I**	**VOCs**	**Quarterly**
Effluent Port	**815-DSB-E**	**VOCs**	**Monthly**
		pH	**Monthly**
817-SRC GWTS			
Influent Port	**W-817-01-817-SRC-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**817-SRC-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**

Table 2.4-10 (Con't.). High Explosives Process Area Operable Unit treatment facility sampling and analysis plans.

Sample location	Sample identification	Parameter	Frequency
817-PRX GWTS			
Influent Port	**817-PRX-I**	**VOCs**	**Quarterly**
		HE Compounds	**Quarterly**
		Perchlorate	**Quarterly**
Effluent Port	**817-PRX-E**	**VOCs**	**Monthly**
		HE Compounds	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
829-SRC GWTS			
Influent Port	**W-829-06-829-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
Effluent Port	**829-SRC-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		Nitrate	**Monthly**
		pH	**Monthly**

Notes:

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:NO3	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	3		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	M	CMP	E300.0:PERC	4		
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	1	Y	
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	2	Y	
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	3		
GALLO1	WS	Tnbs2	Q	WGMG	E502.2:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E601:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	1	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	2	Y	
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	3		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
GALLO1	WS	Tnbs2	M	CMP	E8330LOW:ALL	4		
SPRING14	SPR	Tpsg-Tps	O	CMP	ANIONS:CL	1	Y	
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	Y	
SPRING14	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	Y	
SPRING14	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	Y	
SPRING14	SPR	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
SPRING5	SPR	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
SPRING5	SPR	Tpsg-Tps	S	CMP	E601:ALL	3		
SPRING5	SPR	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:NO3	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:NO3	3		
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E300.0:PERC	3		
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	1	Y	
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	2	Y	
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	3		
W-35B-01	GW	Qal/WBR	Q	CMP	E601:ALL	4		
W-35B-01	GW	Qal/WBR	S	CMP	E8330LOW:ALL	1	Y	
W-35B-01	GW	Qal/WBR	S	CMP	E8330LOW:ALL	3		
W-35B-02	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-02	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-02	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-02	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-02	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-03	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-03	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-03	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-03	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-03	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-04	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-04	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E300.0:PERC	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-04	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-04	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-04	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35B-05	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-35B-05	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-35B-05	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-35B-05	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-35B-05	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-35C-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-35C-01	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	Y	
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-35C-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-35C-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:NO3	1	Y	
W-35C-02	PTMW	Tnbs1	O	CMP	E300.0:PERC	1	Y	
W-35C-02	PTMW	Tnbs1	S	CMP	E601:ALL	1	Y	
W-35C-02	PTMW	Tnbs1	S	CMP	E601:ALL	3		
W-35C-02	PTMW	Tnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	Y	
W-35C-04	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	Y	
W-35C-04	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-35C-04	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-35C-04	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-35C-04	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-35C-04	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	Y	
W-35C-05	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-35C-05	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	Y	
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-35C-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-35C-05	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-35C-06	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-35C-06	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Inoperable pump.
W-35C-06	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-35C-06	PTMW	Qal/WBR	A	CMP	E8330LOW:ALL	1	N	Inoperable pump.
W-35C-06	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-35C-07	PTMW	Tnsc2	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-35C-07	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-35C-07	PTMW	Tnsc2	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-35C-07	PTMW	Tnsc2	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-35C-08	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-35C-08	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-35C-08	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-35C-08	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-35C-08	PTMW	Tnsc2	O	CMP	E8330LOW:ALL	1	Y	
W-4A	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-4A	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-4A	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-4A	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-4A	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-4AS	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-4AS	PTMW	Tpsg-Tps	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-4AS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-4AS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-4AS	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-4B	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	Y	
W-4B	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	Y	
W-4B	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-4B	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-4B	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-4C	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-4C	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-4C	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-6BD	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-6BD	PTMW	Tpsg-Tps	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-6BD	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6BD	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-6BD	PTMW	Tpsg-Tps	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-6BS	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-6BS	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-6BS	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-6BS	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-6BS	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-6CD	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-6CD	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6CD	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6CD	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-6CI	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6CI	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6CI	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6CI	PTMW	Tnsc2	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-6CI	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6CS	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-6CS	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-6CS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6CS	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-6CS	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-6EI	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6EI	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6EI	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6EI	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-6EI	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6ER	EW	Tnbs2	O	CMP-TF	E300.0:NO3	1	Y	
W-6ER	EW	Tnbs2	O	CMP-TF	E300.0:PERC	1	Y	
W-6ER	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-6ER	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-6ER	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-6ER	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-6ER	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	1	Y	
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-6ES	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-6ES	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Inoperable pump.
W-6ES	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-6ES	PTMW	Qal/WBR	A	CMP	E8330LOW:ALL	1	N	Inoperable pump.
W-6ES	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-6F	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-6F	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-6F	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-6F	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-6F	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-6G	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-6G	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-6G	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6G	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6G	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-6H	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-6H	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-6H	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-6H	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-6H	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-6I	PTMW	Tpsg-Tps	O	CMP	E300.0:NO3	1	Y	
W-6I	PTMW	Tpsg-Tps	O	CMP	E300.0:PERC	1	Y	
W-6I	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-6I	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-6I	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-6J	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-6J	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-6J	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-6J	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-6J	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-6K	PTMW	Tnbs2	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-6K	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-6K	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6K	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6K	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-6L	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	Y	
W-6L	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	Y	
W-6L	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-6L	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-6L	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	N	Inoperable pump.
W-806-06A	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	N	Inoperable pump.
W-806-06A	PTMW	Tnsc1b	O	CMP	E601:ALL	1	N	Inoperable pump.
W-806-06A	PTMW	Tnsc1b	O	CMP	E8330LOW:ALL	1	N	Inoperable pump.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	Dry.
W-806-07	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	Dry.
W-806-07	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	Dry.
W-806-07	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	Dry.
W-808-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-808-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-808-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-808-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-808-01	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	Y	
W-808-02	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-808-02	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-808-02	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-808-02	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-808-02	PTMW	Tpsg-Tps	O	CMP	E8330LOW:ALL	1	N	Dry.
W-808-03	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-808-03	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-808-03	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-808-03	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-808-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	Y	
W-809-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-809-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-809-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-809-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-809-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-809-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-809-02	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-809-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-809-02	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-809-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-809-03	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-809-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-809-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-809-03	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-809-04	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-809-04	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-809-04	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-809-04	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-810-01	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-810-01	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-810-01	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-810-01	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-814-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-814-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-814-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-814-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-814-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-814-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-814-02	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-814-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-814-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-814-02	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-814-03	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-814-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-814-03	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-814-04	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-814-04	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-814-04	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-814-04	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-814-2138	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-814-2138	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-814-2138	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-815-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-815-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-815-02	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-02	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-02	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-815-02	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-02	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-815-02	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-02	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-815-02	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-02	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-815-03	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Dry.
W-815-03	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-03	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Dry.
W-815-04	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-04	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-04	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-815-04	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-815-04	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-815-04	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-04	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-815-04	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-04	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-815-05	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	N	Unsafe conditions/erosion near well.
W-815-05	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	N	Unsafe conditions/erosion near well.
W-815-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	N	Unsafe conditions/erosion near well.
W-815-05	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-05	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	N	Unsafe conditions/erosion near well.
W-815-06	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-06	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-06	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-06	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-06	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-815-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-815-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-07	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-815-08	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-815-08	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-815-08	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-815-08	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-815-08	PTMW	UTnbs1	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-815-1928	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-815-1928	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-815-1928	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-815-2110	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-815-2110	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2110	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2111	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-815-2111	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-815-2111	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-815-2111	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2111	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	Y	
W-815-2217	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	Y	
W-815-2217	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-815-2217	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-2217	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-815-2608	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-815-2608	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-815-2608	EW	Tnbs2	Q	CMP-TF	E601:ALL	1	Y	
W-815-2608	EW	Tnbs2	Q	CMP-TF	E601:ALL	2	Y	
W-815-2608	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-2608	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-815-2621	PTMW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-815-2621	PTMW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-815-2621	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-815-2621	PTMW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-815-2803	EW	Tnbs2	S	CMP-TF	E300.0:NO3	1	Y	
W-815-2803	EW	Tnbs2	A	CMP-TF	E300.0:NO3	3		
W-815-2803	EW	Tnbs2	S	CMP-TF	E300.0:PERC	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-815-2803	EW	Tnbs2	A	CMP-TF	E300.0:PERC	3		
W-815-2803	EW	Tnbs2	Q	CMP-TF	E601:ALL	1	Y	
W-815-2803	EW	Tnbs2	Q	CMP-TF	E601:ALL	2	Y	
W-815-2803	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-815-2803	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-815-2803	EW	Tnbs2	S	CMP-TF	E8330LOW:ALL	1	Y	
W-815-2803	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	3		
W-817-01	EW	Tnbs2	A	DIS-TF	E300.0:NO3	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E300.0:PERC	4		
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E601:ALL	4		
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	1	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	2	Y	
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	3		
W-817-01	EW	Tnbs2	Q	DIS-TF	E8330LOW:ALL	4		
W-817-03	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-817-03	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-817-03	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-817-03	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-817-03	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-817-03	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-817-03	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-817-03	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-817-03	EW	Tnbs2	A	DIS-TF	E8330LOW:ALL	3		
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-817-03A	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-817-03A	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-817-03A	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-817-04	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-817-04	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-817-04	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-817-04	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-817-04	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-817-05	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-817-05	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-817-05	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-817-05	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-817-05	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-817-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-817-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-817-07	PTMW	Tnbs2	S	CMP	E601:ALL	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-817-07	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E300.0:NO3	1	Y	
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E300.0:PERC	1	Y	
W-817-2318	EW	Tpsg-Tps	A	DIS-TF	E300.0:PERC	3		
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E601:ALL	1	Y	
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E601:ALL	2	Y	
W-817-2318	EW	Tpsg-Tps	S	CMP-TF	E601:ALL	3		
W-817-2318	EW	Tpsg-Tps	S	DIS-TF	E601:ALL	4		
W-817-2318	EW	Tpsg-Tps	A	CMP-TF	E8330LOW:ALL	1	Y	
W-817-2318	EW	Tpsg-Tps	A	DIS-TF	E8330LOW:ALL	3		
W-817-2609	PTMW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-817-2609	PTMW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-817-2609	PTMW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-817-2609	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-817-2609	PTMW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-818-01	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-01	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-01	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-01	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-01	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-818-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-03	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-03	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-818-04	PTMW	Tnsc2	A	CMP	E300.0:NO3	1	Y	
W-818-04	PTMW	Tnsc2	A	CMP	E300.0:PERC	1	Y	
W-818-04	PTMW	Tnsc2	S	CMP	E601:ALL	1	Y	
W-818-04	PTMW	Tnsc2	S	CMP	E601:ALL	3		
W-818-04	PTMW	Tnsc2	A	CMP	E8330LOW:ALL	1	Y	
W-818-06	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-06	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-06	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-06	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-06	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-818-07	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-07	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-07	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-07	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-07	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-818-08	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-818-08	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-818-08	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-818-08	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-818-08	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-08	EW	Tnbs2	S	DIS-TF	E601:ALL	4		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-818-08	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-818-09	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-818-09	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-818-09	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-818-09	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-818-09	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-818-09	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-818-09	EW	Tnbs2	A	CMP-TF	E8330LOW:ALL	1	Y	
W-818-11	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-818-11	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-818-11	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-818-11	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-818-11	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-819-02	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-819-02	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-819-02	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-819-02	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-819-02	PTMW	UTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-823-01	PTMW	Tpsg-Tps	A	CMP	E300.0:NO3	1	Y	
W-823-01	PTMW	Tpsg-Tps	A	CMP	E300.0:PERC	1	Y	
W-823-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	1	Y	
W-823-01	PTMW	Tpsg-Tps	S	CMP	E601:ALL	3		
W-823-01	PTMW	Tpsg-Tps	A	CMP	E8330LOW:ALL	1	Y	
W-823-01	PTMW	Tpsg-Tps	O	DIS	EM8015:DIESEL	1	Y	
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	Y	
W-823-02	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	Y	
W-823-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-02	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	Y	
W-823-02	PTMW	Tnbs2	O	DIS	EM8015:DIESEL	1	Y	
W-823-03	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-823-03	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-823-03	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-03	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-03	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-823-03	PTMW	Tnbs2	O	DIS	EM8015:DIESEL	1	Y	
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-823-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-823-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-823-13	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-823-13	PTMW	Tnbs2	A	CMP	E8330LOW:ALL	1	Y	
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:NO3	1	N	Dry.
W-827-01	PTMW	Tnbs2	O	CMP	E300.0:PERC	1	N	Dry.
W-827-01	PTMW	Tnbs2	O	CMP	E601:ALL	1	N	Dry.
W-827-01	PTMW	Tnbs2	O	CMP	E8330LOW:ALL	1	N	Dry.
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:NO3	1	Y	
W-827-02	PTMW	Tnsc1	O	CMP	E300.0:PERC	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-827-02	PTMW	Tnsc1	O	CMP	E601:ALL	1	Y	
W-827-02	PTMW	Tnsc1	O	CMP	E8330LOW:ALL	1	Y	
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	Inoperable pump.
W-827-03	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	Inoperable pump.
W-827-03	PTMW	UTnbs1	O	CMP	E601:ALL	1	N	Inoperable pump.
W-827-03	PTMW	UTnbs1	O	CMP	E8330LOW:ALL	1	N	Inoperable pump.
W-827-04	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-827-04	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
W-827-04	PTMW	LTnbs1	S	CMP	E601:ALL	1	N	Dry.
W-827-04	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-827-04	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	N	Dry.
W-827-05	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-827-05	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-827-05	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-827-05	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-827-05	PTMW	LTnbs1	A	CMP	E8330LOW:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:NO3	4		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E300.0:PERC	4		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	1	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	2	Y	
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	3		
W-829-06	EW	Tnsc1b	Q	DIS-TF	E601:ALL	4		
W-829-06	EW	Tnsc1b	A	DIS-TF	E8330LOW:ALL	1	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E300.0:PERC	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E624:ALL	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E8330:R+H	2	Y	
W-829-15	DMW	LTnbs1	A	WGMG	E8330:TNT	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E300.0:PERC	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E624:ALL	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	3		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:R+H	4		
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	1	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	2	Y	
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	3		

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-829-1938	DMW	LTnbs1	Q	WGMG	E8330:TNT	4		
W-829-1940	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-829-1940	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-829-1940	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-829-1940	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-829-1940	PTMW	Tnsc1b	A	CMP	E8330LOW:ALL	1	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E300.0:PERC	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E624:ALL	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E8330:R+H	2	Y	
W-829-22	DMW	LTnbs1	A	WGMG	E8330:TNT	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E601:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL18	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:NO3	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	1	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	2	Y	
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	3		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	CMP	E300.0:PERC	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	1	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	2	Y	
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	3		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	WGMG	E502.2:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	

Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	1	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	2	Y	
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	3		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		
WELL20	WS	Tnbs1	M	CMP	E8330LOW:ALL	4		

Table 2.4-12. Building 815-Source (815-SRC) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-SRC	January	NA	2.3	0.71	29	16	NA
	February	NA	2.0	0.58	23	13	NA
	March	NA	1.8	0.52	20	11	NA
	April	NA	2.1	0.69	27	15	NA
	May	NA	1.8	0.58	23	13	NA
	June	NA	0.79	0.26	10	5.6	NA
Total		NA	11	3.3	130	74	NA

Notes:
*Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.

Table 2.4-13. Building 815-Proximal (815-PRX) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-PRX	January	NA	0	0	0	NA	NA
	February	NA	0.00027	< 0.0001	0.00064	NA	NA
	March	NA	6.1	2.0	22	NA	NA
	April	NA	4.2	2.8	31	NA	NA
	May	NA	3.3	2.2	24	NA	NA
	June	NA	2.9	1.8	20	NA	NA
Total		NA	16	8.9	97	NA	NA

Notes:
*Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.

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Table 2.4-14. Building 815-Distal Site Boundary (815-DSB) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
815-DSB	January	NA	6.3	NA	NA	NA	NA
	February	NA	4.9	NA	NA	NA	NA
	March	NA	4.6	NA	NA	NA	NA
	April	NA	5.1	NA	NA	NA	NA
	May	NA	4.9	NA	NA	NA	NA
	June	NA	4.3	NA	NA	NA	NA
Total		NA	30	NA	NA	NA	NA

Table 2.4-15. Building 817-Source (817-SRC) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
817-SRC	January	NA	0	0	0	0	NA
	February	NA	0	0.032	0.087	0.045	NA
	March	NA	0	0.16	0.45	0.23	NA
	April	NA	0	0.18	0.52	0.27	NA
	May	NA	0	0.15	0.44	0.23	NA
	June	NA	0	0.12	0.35	0.18	NA
Total		NA	0	0.66	1.8	0.95	NA

Notes:

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.**

Table 2.4-16. Building 817-Proximal (817-PRX) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
817-PRX	January	NA	0.34	0.64	2.7	0.24	NA
	February	NA	2.0	5.6	23	2.2	NA
	March	NA	3.1	6.2	27	2.3	NA
	April	NA	3.1	7.6	32	2.8	NA
	May	NA	0.63	1.6	6.8	0.60	NA
	June	NA	0.27	0.45	2.2	0.15	NA
Total		NA	9.5	22	93	8.3	NA

Notes:

*Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign N_2 gas by anaerobic denitrifying bacteria.

Table 2.4-17. Building 829-Source (829-SRC) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
829-SRC	January	NA	0	0	0	NA	NA
	February	NA	0	0	0	NA	NA
	March	NA	0	0	0	NA	NA
	April	NA	0	0	0	NA	NA
	May	NA	0.0019	0.0048	0.032	NA	NA
	June	NA	0.0077	0.0065	0.045	NA	NA
Total		NA	0.0097	0.011	0.077	NA	NA

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Inoperable pump.
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-01C	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-02B	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-04	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-05	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-06	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	N	Dry.

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	N	Dry.
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-06	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-07	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-07	DMW	Tnbs1-Tnbs0	A	DIS	MS:UISO	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-08	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
K1-09	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
K2-03	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K2-03	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-04D	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K2-04D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-04S	PTMW	Qal/WBR	E	CMP	AS:UISO	2	N	To be sampled in 2014.
K2-04S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
K2-04S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
K2-04S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
K2-04S	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
K2-04S	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Insufficient water.
NC2-05	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Insufficient water.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Insufficient water.

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Insufficient water.
NC2-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-05A	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-05A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-06	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-06A	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-06A	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:PERC	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-09	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-10	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:PERC	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-10	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11D	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-11S	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-11S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-12D	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12D	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12I	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12I	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-12S	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-12S	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-13	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-14S	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC2-14S	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E300.0:PERC	3		
NC2-14S	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC2-14S	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC2-15	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-16	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC2-16	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	1	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	3		
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-16	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-17	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Inoperable pump.
NC2-17	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
NC2-18	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-18	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-19	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC2-19	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-19	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-20	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
NC2-20	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC2-20	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC2-20	PTMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC2-21	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC2-21	PTMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E300.0:PERC	3		
NC7-10	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-10	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-11	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-11	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-11	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-11	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-11	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-11	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-14	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-14	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-14	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-14	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-15	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-15	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC7-15	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-15	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-15	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-15	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-19	PTMW	Qal/WBR	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC7-19	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-19	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-19	PTMW	Qal/WBR	S	CMP	E906:ALL	4		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-27	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-27	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-27	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	2	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	
NC7-28	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-29	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-43	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-43	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-43	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-44	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-44	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-44	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-46	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-46	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-46	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-46	PTMW	Qal/WBR	A	CMP	E906:ALL	2	Y	
NC7-54	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-54	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-54	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-55	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-55	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-55	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-55	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-56	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-56	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC7-56	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-56	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-56	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-57	PTMW	Qal/WBR	O	CMP	AS:UISO	2	N	Dry.
NC7-57	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC7-57	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
NC7-57	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-57	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-57	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-58	PTMW	Qal/WBR	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC7-58	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-58	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-58	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-59	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
NC7-59	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC7-59	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-59	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-59	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-59	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-60	PTMW	Tnsc0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC7-60	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E300.0:PERC	1	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E300.0:PERC	3		
NC7-60	PTMW	Tnsc0	S	DIS	E8330LOW:ALL	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-60	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
NC7-61	PTMW	Tnbs1-Tnbs0	O	DIS	E8082A:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	WGMG	E906:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	S	WGMG	E906:ALL	4		
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
NC7-61	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-62	PTMW	Qal/WBR	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC7-62	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-62	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-62	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-69	PTMW	Tmss	A	CMP	AS:UISO	2	Y	
NC7-69	PTMW	Tmss	A	CMP	E300.0:NO3	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E300.0:PERC	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E300.0:PERC	4		
NC7-69	PTMW	Tmss	S	DIS	E8330LOW:ALL	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E906:ALL	2	Y	
NC7-69	PTMW	Tmss	S	CMP	E906:ALL	4		
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Tracer test in progress.
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Tracer test in progress.
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Tracer test in progress.
NC7-70	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
NC7-70	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-70	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	N	Tracer test in progress.
NC7-71	PTMW	Qal/WBR	Q	DIS	DWMETALS:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	DWMETALS:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E300.0:NO3	1	Y	
NC7-71	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	E300.0:PERC	1	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-71	PTMW	Qal/WBR	Q	DIS	E8330LOW:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E8330LOW:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E9060:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	E9060:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-71	PTMW	Qal/WBR	Q	DIS	GENMIN:ALL	1	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	GENMIN:ALL	2	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	1	Y	
NC7-71	PTMW	Qal/WBR	M	DIS	KPA:UTOT	2	Y	
NC7-71	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-71	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-72	PTMW	Qal/WBR	E	CMP	AS:UISO	2	N	To be sampled in 2014.
NC7-72	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-72	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-72	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-73	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-73	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC7-73	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
NC7-73	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-73	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
SPRING24	SPR	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
SPRING24	SPR	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
SPRING24	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-05	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-850-05	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-850-05	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-850-05	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-850-2145	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-850-2145	PTMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2145	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2312	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
W-850-2312	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2312	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2313	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-850-2313	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
W-850-2313	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-850-2313	PTMW	Qal/WBR	S	DIS	E8330LOW:ALL	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-850-2313	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-850-2313	PTMW	Qal/WBR	A	DIS	MS:UISO	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2314	PTMW	Tnbs1-Tnbs0	S	DIS	E8330LOW:ALL	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2314	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2315	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2315	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2316	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2316	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	DWMETALS:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	DWMETALS:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E300.0:NO3	1	Y	
W-850-2416	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	E300.0:PERC	1	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	E8330LOW:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E8330LOW:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E9060:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	E9060:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-850-2416	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	S	CMP	E906:ALL	4		
W-850-2416	PTMW	Tnsc0	Q	DIS	GENMIN:ALL	1	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	GENMIN:ALL	2	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	1	Y	
W-850-2416	PTMW	Tnsc0	M	DIS	KPA:UTOT	2	Y	
W-850-2416	PTMW	Tnsc0	Q	DIS	MS:UISO	1	Y	
W-850-2416	PTMW	Tnsc0	A	CMP	MS:UISO	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	DWMETALS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E300.0:NO3	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	E300.0:PERC	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E8330LOW:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	E9060:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	GENMIN:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	M	DIS	KPA:UTOT	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LITEHCS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	LOWVFAS:ALL	2	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	1	Y	
W-850-2417	PTMW	Tnbs1-Tnbs0	Q	DIS	MS:UISO	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	A	CMP	AS:UISO	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E300.0:PERC	4		
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E906:ALL	2	Y	
W-850-2805	PTMW	Tnbs1/Tnbs0	S	CMP	E906:ALL	4		
W-865-02	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-02	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-05	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	N	Dry.
W-865-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	N	Dry.
W-865-05	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-1802	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-865-1802	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-1802	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-1803	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
W-865-1803	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-1803	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-2005	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-865-2005	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-865-2005	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-865-2121	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-865-2121	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-865-2133	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	3		
W-865-2133	GW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	S	DIS	E300.0:NO3	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-865-2133	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-865-2133	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-865-2224	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-865-2224	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-01	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	3		
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	N	Dry.
W-PIT1-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-PIT1-2204	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT1-2204	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2209	GW	Tnbs1-Tnbs0	S	DIS	E601:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2209	GW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-PIT1-2225	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	AS:UISO	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:NO3	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	

Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8260:ALL	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E8330:R+H	4		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2326	DMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	E	CMP	AS:UISO	2	N	To be sampled in 2014.
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	1	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	3		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E300.0:PERC	4		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	1	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	2	Y	
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	3		
W-PIT1-2620	PTMW	Tnbs1-Tnbs0	Q	WGMG	E906:ALL	4		
W-PIT7-16	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
W-PIT7-16	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
W-PIT7-16	PTMW	Tnsc0	S	DIS	E8330LOW:ALL	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
W-PIT7-16	PTMW	Tnsc0	S	CMP	E906:ALL	4		
W8SPRNG	SPR	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W8SPRNG	SPR	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Table 2.5-2. Pit 7-Source (PIT7-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
PIT7-SRC	January	NA	637	NA	8,913
	February	NA	665	NA	8,400
	March	NA	624	NA	8,413
	April	NA	704	NA	8,750
	May	NA	533	NA	6,581
	June	NA	471	NA	5,925
Total		NA	3,634	NA	46,982

Table 2.5-3. Pit 7-Source (PIT7-SRC) volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
PIT7-SRC-I	1/9/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-I	4/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-I[a]	4/3/13 DUP	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	1/9/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	2/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	3/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	4/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	5/6/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PIT7-SRC-E	6/10/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:

[a] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-3 (Cont.). Analyte detected but not reported in main table.

Location	Date	Detection frequency
PIT7-SRC-I	1/9/13	0 of 18
PIT7-SRC-I	4/3/13	0 of 18
PIT7-SRC-I[a]	4/3/13 DUP	0 of 18
PIT7-SRC-E	1/9/13	0 of 18
PIT7-SRC-E	2/4/13	0 of 18
PIT7-SRC-E	3/4/13	0 of 18
PIT7-SRC-E	4/3/13	0 of 18
PIT7-SRC-E	5/6/13	0 of 18
PIT7-SRC-E	6/10/13	0 of 18

Notes:

[a] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-4. Pit 7-Source (PIT7-SRC) nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate (as NO3) (mg/L)	Perchlorate (μg/L)
PIT7-SRC-I	1/9/13	33	9.5
PIT7-SRC-I	4/3/13	35	10
PIT7-SRC-I[a]	4/3/13 DUP	35	11
PIT7-SRC-E	1/9/13	<0.5	<4
PIT7-SRC-E	2/4/13	<0.5	<4
PIT7-SRC-E	3/4/13	<0.5	<4
PIT7-SRC-E	4/3/13	<0.5	<4
PIT7-SRC-E	5/6/13	6.7	<4
PIT7-SRC-E	6/10/13	12	<4 L

Notes:

[a] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-5. Pit 7-Source (PIT7-SRC) total uranium in ground water extraction and treatment system influent and effluent.

Location	Date	Total Uranium (pCi/L)
PIT7-SRC-I	1/9/13	33.8 ± 3.10
PIT7-SRC-I	4/3/13	30.8 ± 3.22
PIT7-SRC-I[a]	4/3/13 DUP	33.3 ± 3.45
PIT7-SRC-E	1/9/13	<0.3
PIT7-SRC-E	2/4/13	<0.3
PIT7-SRC-E	3/4/13	<0.3
PIT7-SRC-E	4/3/13	<0.3
PIT7-SRC-E	5/6/13	<0.3
PIT7-SRC-E	6/10/13	<0.3

Notes:

[a] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-6. Pit 7-Source (PIT7-SRC) tritium in ground water extraction and treatment system influent and effluent.

Location	Date	Tritium (pCi/L)
PIT7-SRC-I	1/9/13	49200 ± 9560
PIT7-SRC-I	4/3/13	48100 ± 9340
PIT7-SRC-I[a]	4/3/13 DUP	48400 ± 9400
PIT7-SRC-E	1/9/13	47500 ± 9230
PIT7-SRC-E	2/4/13	50300 ± 9770
PIT7-SRC-E	3/4/13	50600 ± 9830
PIT7-SRC-E	4/3/13	48800 ± 9480
PIT7-SRC-E	5/6/13	48400 ± 9400
PIT7-SRC-E	6/10/13	47600 ± 9240

Notes:

[a] **Duplicate sampling and analysis performed in April as part of QA/QC process.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-7. Pit 7-Source (PIT7-SRC) treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
PIT7-SRC GWTS			
Influent Port	**PIT7-SRC-I**	**VOCs**	**Quarterly**
		Uranium	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
		Tritium[a]	**Quarterly**
		pH	**Quarterly**
Effluent Port	**PIT7-SRC-E**	**VOCs**	**Monthly**
		Uranium	**Monthly**
		Perchlorate	**Monthly**
		Nitrate	**Monthly**
		Tritium[a]	**Monthly**
		pH	**Monthly**

Notes:

[a] Although tritium is not treated/removed by the PIT7-SRC GWTS, tritium activities will be monitoring to determine levels that are being discharged to the infiltration trench.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K7-01	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K7-03	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-06	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-06	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K7-07	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
K7-07	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
K7-07	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
K7-07	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Dry.
K7-07	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
K7-07	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
K7-09	DMW	Tnsc0	A	CMP	AS:UISO	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E200.7:LI	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E300.0:PERC	4		
K7-09	DMW	Tnsc0	A	CMP	E340.2:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E601:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E8082A:ALL	2	Y	
K7-09	DMW	Tnsc0	A	CMP	E8330LOW:ALL	2	Y	
K7-09	DMW	Tnsc0	S	CMP	E906:ALL	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K7-09	DMW	Tnsc0	S	CMP	E906:ALL	4		
K7-09	DMW	Tnsc0	A	CMP	T26METALS:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K7-10	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K7-10	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-12	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC7-12	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-12	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-12	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-12	PTMW	Qal/WBR	A	DIS	MS:UISO	2	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-16	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-16	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-16	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-16	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-16	PTMW	Qal/WBR	Q	DIS	MS:UISO	2	Y	
NC7-17	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-17	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-17	PTMW	Qal/WBR	E	CMP	E300.0:PERC	2	N	To be sampled in 2014.
NC7-17	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-17	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-17	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-18	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-18	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-18	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-18	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-18	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-18	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-20	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Insufficient water.
NC7-20	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-20	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-20	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-20	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-20	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-21	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-21	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-21	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-21	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-22	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-22	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Dry.
NC7-22	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-22	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-24	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-24	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-24	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-24	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-24	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	AS:UISO	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E300.0:NO3	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E300.0:PERC	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	E300.0:PERC	4		
NC7-25	EW	Tnbs1-Tnbs0	A	CMP-TF	E601:ALL	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	E601:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	S	CMP-TF	E906:ALL	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	S	CMP-TF	E906:ALL	4		
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	KPA:UTOT	2	Y	
NC7-25	EW	Tnbs1-Tnbs0	A	DIS-TF	MS:UISO	4		
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
NC7-26	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-34	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-34	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-36	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-37	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
NC7-37	PTMW	Qal/WBR	A	CMP	E601:ALL	2	N	Dry.

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-37	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
NC7-37	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-40	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-40	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-40	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-40	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-40	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-40	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-40	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-40	PTMW	Qal/WBR	Q	DIS	MS:UISO	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E8082A:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	E906:ALL	2	Y	
NC7-47	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E200.7:LI	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E340.2:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E8082A:ALL	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	E8330LOW:ALL	2	Y	
NC7-48	DMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-48	DMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-48	DMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-48	DMW	Qal/WBR	A	CMP	T26METALS:ALL	2	Y	
NC7-49A	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-49A	PTMW	Qal/WBR	E	CMP	E300.0:NO3	2	N	To be sampled in 2014.
NC7-49A	PTMW	Qal/WBR	E	CMP	E300.0:PERC	2	N	To be sampled in 2014.
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-49A	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-51	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
NC7-51	PTMW	Qal/WBR	S	DIS	E906:ALL	1	Y	
NC7-51	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-51	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-51	PTMW	Qal/WBR	Q	DIS	MS:UISO	1	Y	
NC7-51	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
NC7-52	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-53	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
NC7-53	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	Y	
NC7-53	PTMW	Qal/WBR	O	DIS	E906:ALL	2	Y	
NC7-63	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	N	Insufficient water.
NC7-63	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Insufficient water.
NC7-63	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Insufficient water.
NC7-63	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	N	Insufficient water.
NC7-63	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Insufficient water.
NC7-63	EW	Qal/WBR	S	CMP	E906:ALL	4		
NC7-63	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	2	N	Insufficient water.
NC7-64	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
NC7-64	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
NC7-64	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
NC7-64	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
NC7-64	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
NC7-64	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
NC7-64	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
NC7-64	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
NC7-64	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	1	Y	
NC7-64	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	2	Y	
NC7-64	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	4		
NC7-64	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
NC7-65	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
NC7-65	PTMW	Tnsc0	A	CMP	E601:ALL	2	Y	
NC7-65	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-65	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-65	PTMW	Tnsc0	A	DIS	MS:UISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
NC7-67	PTMW	Tnsc0	A	CMP	E601:ALL	2	Y	
NC7-67	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-67	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-68	PTMW	Tnbs1-Tnbs0	A	DIS	AS:UISO	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC7-68	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC7-75	PTMW	Tnsc0	A	CMP	AS:UISO	2	Y	
NC7-75	PTMW	Tnsc0	A	CMP	E300.0:NO3	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E300.0:PERC	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E300.0:PERC	4		
NC7-75	PTMW	Tnsc0	A	CMP	E601:ALL	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E906:ALL	2	Y	
NC7-75	PTMW	Tnsc0	S	CMP	E906:ALL	4		
NC7-76	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
NC7-76	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
NC7-76	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
NC7-76	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
NC7-76	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-865-01	PTMW	Tnbs1-Tnbs0	A	DIS	DWMETALS:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-865-03	PTMW	Tnbs1-Tnbs0	A	DIS	E300.0:NO3	1	Y	
W-865-03	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-03	PTMW	Tnbs1-Tnbs0	A	DIS	E906:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-865-1804	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	DIS	E601:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	1	Y	
W-865-1804	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	3		
W-PIT3-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT3-01	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT3-01	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT3-02	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT5-01	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT5-01	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT5-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT5-02	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-02	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-02	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-02	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-02	PTMW	Qal/WBR	S	CMP	E906:ALL	1	Y	
W-PIT7-02	PTMW	Qal/WBR	S	CMP	E906:ALL	3		
W-PIT7-03	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-03	PTMW	Qal/WBR	S	CMP	E601:ALL	2	Y	
W-PIT7-03	PTMW	Qal/WBR	S	CMP	E601:ALL	4		
W-PIT7-03	PTMW	Qal/WBR	A	CMP	E906:ALL	1	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	AS:UISO	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-10	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-10	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W-PIT7-11	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-12	PTMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-12	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-13	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-14	PTMW	Tnsc0	O	DIS	AS:UISO	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	CMP	E906:ALL	2	Y	
W-PIT7-14	PTMW	Tnsc0	A	DIS	MS:UISO	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:PERC	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-15	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-15	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E300.0:PERC	2	N	To be sampled in 2014.
W-PIT7-1860	PTMW	Tnbs1-Tnbs0	E	CMP	E906:ALL	2	N	To be sampled in 2014.
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	AS:UISO	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:NO3	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E300.0:PERC	2	Y	
W-PIT7-1861	PTMW	Qal/WBR	O	CMP	E906:ALL	2	Y	
W-PIT7-1904	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1904	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1905	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1905	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1907	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1907	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1915	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1915	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1916	PTMW	Qal/WBR	A	DIS	AS:UISO	2	Y	
W-PIT7-1916	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-1918	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-1918	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	
W-PIT7-1919	PTMW	Qal/WBR	A	DIS	E300.0:O-PO2	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT7-2141	PTMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2305	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2305	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2305	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2305	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	1	Y	
W-PIT7-2305	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	2	Y	
W-PIT7-2305	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	3		
W-PIT7-2305	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	4		
W-PIT7-2305	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2306	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Insufficient water.
W-PIT7-2306	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2307	EW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2307	EW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2307	EW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2307	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	1	Y	
W-PIT7-2307	EW	Qal/WBR	Q	DIS-TF	KPA:UTOT	2	Y	
W-PIT7-2307	EW	Qal/WBR	S	DIS-TF	KPA:UTOT	4		
W-PIT7-2307	EW	Qal/WBR	A	DIS-TF	MS:UISO	4		
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E300.0:PERC	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	E601:ALL	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	S	CMP	E906:ALL	2	Y	
W-PIT7-2309	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT7-2309	PTMW	Qal/WBR	A	CMP	MS:UISO	2	Y	

Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2703	PTMW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2703	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	1	Y	
W-PIT7-2703	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	2	Y	
W-PIT7-2703	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	3		
W-PIT7-2703	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2704	PTMW	Qal/WBR	A	CMP-TF	E601:ALL	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2704	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2704	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	1	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	2	N	Insufficient water.
W-PIT7-2704	PTMW	Qal/WBR	S	CMP-TF	KPA:UTOT	4		
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	AS:UISO	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E300.0:NO3	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E300.0:PERC	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	E300.0:PERC	4		
W-PIT7-2705	PTMW	Qal/WBR	A	CMP-TF	E601:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	A	DIS-TF	E601:ALL	4		
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	S	CMP-TF	E906:ALL	4		
W-PIT7-2705	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	1	Y	
W-PIT7-2705	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	2	Y	
W-PIT7-2705	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	3		
W-PIT7-2705	PTMW	Qal/WBR	Q	CMP-TF	KPA:UTOT	4		

Table 2.5-9. Pit 7-Source (PIT7-SRC) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	Total Uranium mass removed (g)
PIT7-SRC	January	NA	0	0.38	1.3	2.1
	February	NA	0.0019	0.36	1.3	2.0
	March	NA	0.00098	0.36	1.2	2.0
	April	NA	0	0.39	1.3	4.4
	May	NA	0	0.30	0.99	3.3
	June	NA	0	0.27	0.89	3.0
Total		NA	0.0029	2.0	7.0	17

Table 2.6-1. Building 854-Source (854-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-SRC	January	413	564	1,264	73,168
	February	133	664	393	86,375
	March	580	599	1,642	58,471
	April	814	570	2,288	84,388
	May	722	675	1,981	150,173
	June	645	645	1,778	109,556
Total		3,307	3,717	9,346	562,131

Table 2.6-2. Building 854-Proximal (854-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-PRX	January	NA	0	NA	0
	February	NA	9	NA	1,114
	March	NA	240	NA	19,208
	April	NA	855	NA	68,253
	May	NA	578	NA	45,111
	June	NA	258	NA	19,783
Total		NA	1,940	NA	153,469

Table 2.6-3. Building 854-Distal (854-DIS) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
854-DIS	January	NA	0	NA	0
	February	NA	13	NA	606
	March	NA	20	NA	912
	April	NA	26	NA	1,280
	May	NA	21	NA	996
	June	NA	18	NA	843
Total		NA	98	NA	4,637

Table 2.6-4. Building 854 Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (μg/L)	PCE (μg/L)	cis-1,2-DCE (μg/L)	trans-1,2-DCE (μg/L)	Carbon tetra-chloride (μg/L)	Chloro-form (μg/L)	1,1-DCA (μg/L)	1,2-DCA (μg/L)	1,1-DCE (μg/L)	1,1,1-TCA (μg/L)	1,1,2-TCA (μg/L)	Freon 11 (μg/L)	Freon 113 (μg/L)	Vinyl chloride (μg/L)
Building 854-Distal[a]															
854-DIS-I	**2/19/13**	**31**	**<0.5**	**0.59**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-DIS-I	**4/2/13**	**32**	**<0.5**	**0.66**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-DIS-I[b]	**4/2/13 DUP**	**33**	**<0.5**	**0.64**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-DIS-E	**2/19/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-DIS-E	**3/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-DIS-E	**4/2/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-DIS-E	**5/6/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-DIS-E	**6/3/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Building 854-Proximal[a,c]															
854-PRX-I	**2/13/13**	**9.4**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-I	**3/12/13**	**8.4**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-I	**4/2/13**	**17**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-I[b]	**4/2/13 DUP**	**19**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1**	**<2**	**<0.5**
854-PRX-E	**2/13/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-E	**2/28/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-E	**3/12/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-E	**4/2/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-E	**5/7/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-PRX-E	**6/3/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**

Table 2.6-4 (Cont.). Building 854 Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (µg/L)	PCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Carbon tetra-chloride (µg/L)	Chloro-form (µg/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	1,1-DCE (µg/L)	1,1,1-TCA (µg/L)	1,1,2-TCA (µg/L)	Freon 11 (µg/L)	Freon 113 (µg/L)	Vinyl chloride (µg/L)
Building 854-Source															
854-SRC-I	**1/8/13**	**21**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-I	**4/2/13**	**84**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-I[b]	**4/2/13 DUP**	**58 D**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-E	**1/8/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-E	**2/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-E	**3/4/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-E	**4/2/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-E	**5/6/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
854-SRC-E	**6/3/13**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**

Notes:

[a] No compliance monitoring conducted in January due to GWTS shut down for freeze protection.

[b] Duplicate influent sampling and analysis conducted in April as part of the QA/QC process.

[c] Extra monitoring conducted during hydraulic testing.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-4 (Cont.). Analyte detected but not reported in main table.

Location	Date	Detection frequency
Building 854-Distal[a]		
854-DIS-I	**2/19/13**	**0 of 18**
854-DIS-I	**4/2/13**	**0 of 18**
854-DIS-I[b]	**4/2/13 DUP**	**0 of 18**
854-DIS-E	**2/19/13**	**0 of 18**
854-DIS-E	**3/4/13**	**0 of 18**
854-DIS-E	**4/2/13**	**0 of 18**
854-DIS-E	**5/6/13**	**0 of 18**
854-DIS-E	**6/3/13**	**0 of 18**
Building 854-Proximal[a,c]		
854-PRX-I	**2/13/13**	**0 of 18**
854-PRX-I	**3/12/13**	**0 of 18**
854-PRX-I	**4/2/13**	**0 of 18**
854-PRX-I[b]	**4/2/13 DUP**	**0 of 18**
854-PRX-E	**2/13/13**	**0 of 18**
854-PRX-E	**2/28/13**	**0 of 18**
854-PRX-E	**3/12/13**	**0 of 18**
854-PRX-E	**4/2/13**	**0 of 18**
854-PRX-E	**5/7/13**	**0 of 18**
854-PRX-E	**6/3/13**	**0 of 18**
Building 854-Source		
854-SRC-I	**1/8/13**	**0 of 18**
854-SRC-I	**4/2/13**	**0 of 18**
854-SRC-I[b]	**4/2/13 DUP**	**0 of 18**
854-SRC-E	**1/8/13**	**0 of 18**
854-SRC-E	**2/4/13**	**0 of 18**
854-SRC-E	**3/4/13**	**0 of 18**
854-SRC-E	**4/2/13**	**0 of 18**
854-SRC-E	**5/6/13**	**0 of 18**
854-SRC-E	**6/3/13**	**0 0f 18**

Notes:

[a] **No compliance monitoring conducted in January due to GWTS shut down for freeze protection.**

[b] **No effluent samples collected in November due to GWTS shut down for replacement of treatment media vessels.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-5. Building 854 Operable Unit nitrate and perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Nitrate (as NO3) (mg/L)	Perchlorate (μg/L)
Building 854-Distal[a]			
854-DIS-I	**2/19/13**	**21**	**<4**
854-DIS-I	**4/2/13**	**22**	**5.7**
854-DIS-I[b]	**4/2/13 DUP**	**22**	**4.6**
854-DIS-E	**2/19/13**	**8**	**<4**
854-DIS-E	**3/4/13**	**9.2**	**<4**
854-DIS-E	**4/2/13**	**9.6**	**<4**
854-DIS-E	**5/6/13**	**12**	**<4**
854-DIS-E	**6/3/13**	**19**	**<4**
Building 854-Proximal[a,c]			
854-PRX-I	**2/13/13**	**38**	**7.7**
854-PRX-I	**3/12/13**	**37**	**7.5**
854-PRX-I	**4/2/13**	**39**	**6.7**
854-PRX-I[b]	**4/2/13 DUP**	**8.5 D**	**7.2**
854-PRX-I	**5/7/13**	**39 O**	**–**
854-PRX-I	**6/3/13**	**38**	**–**
854-PRX-E	**2/13/13**	**49**	**<4**
854-PRX-E	**2/28/13**	**<0.5**	**<4**
854-PRX-E	**3/12/13**	**<1 D**	**<4**
854-PRX-E	**4/2/13**	**36**	**<4**
854-PRX-E	**5/7/13**	**35**	**<4**
854-PRX-E	**6/3/13**	**36**	**<4**
Building 854-Source			
854-SRC-I	**1/8/13**	**–**	**<4**
854-SRC-I	**4/2/13**	**–**	**6.4**
854-SRC-I[b]	**4/2/13 DUP**	**–**	**6.2**
854-SRC-E	**1/8/13**	**–**	**<4**
854-SRC-E	**2/4/13**	**–**	**<4**
854-SRC-E	**3/4/13**	**–**	**<4**
854-SRC-E	**4/2/13**	**–**	**<4**
854-SRC-E	**5/6/13**	**–**	**<4**
854-SRC-E	**6/3/13**	**–**	**<4**

Notes:

[a] No compliance monitoring conducted in January due to GWTS shut down for freeze protection.

[b] Monthly influent nitrate samples collected for internal purposes.

[c] Extra monitoring conducted during hydraulic testing.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-6. Building 854 Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
854-SRC GWTS			
Influent Port	**854-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**854-SRC-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		pH	**Monthly**
854-SRC SVTS			
Influent Port	**W-854-1834-854-SRC-VI**	**No Monitoring Requirements**	
Effluent Port	**854-SRC-E**	**VOCs**	**Weekly[a]**
Intermediate GAC	**854-SRC-VCF3I**	**VOCs**	**Weekly[a]**
854-PRX GWTS			
Influent Port	**W-854-03-854-PRX-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**854-PRX-BTU-I**	**VOCs**	**Monthly**
Effluent Port	**854-PRX-E**	**Perchlorate**	**Monthly**
		Nitrate	**Monthly**
		pH	**Monthly**
854-DIS GWTS			
Influent Port	**W-854-2139-854-DIS-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		Nitrate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**854-DIS-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		Nitrate	**Monthly**
		pH	**Monthly**

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
SPRING10	SPR	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
SPRING10	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
SPRING11	SPR	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
SPRING11	SPR	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-01	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E300.0:PERC	4		
W-854-01	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-01	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-02	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	1	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	3		
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-02	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-02	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	1	N	Facility was offline.
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	1	N	Facility was offline.
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	3		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	M	DIS-TF	E300.0:NO3	4		
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	3		
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	4		
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	1	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	2	Y	
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	3		
W-854-03	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	4		
W-854-04	PTWM	Tmss	A	CMP	E300.0:NO3	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E300.0:PERC	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E300.0:PERC	4		
W-854-04	PTWM	Tmss	S	CMP	E601:ALL	2	Y	
W-854-04	PTWM	Tmss	S	CMP	E601:ALL	4		
W-854-05	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-05	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-06	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-06	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-07	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-07	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-08	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Insufficient water.
W-854-08	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-09	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-09	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-10	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-10	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-11	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
W-854-11	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-12	PTWM	Tmss	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E300.0:PERC	4		
W-854-12	PTWM	Tmss	S	CMP	E601:ALL	2	N	Insufficient water.
W-854-12	PTWM	Tmss	S	CMP	E601:ALL	4		
W-854-13	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-13	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-14	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-14	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-15	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	Y	

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	Y	
W-854-15	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-17	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-17	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-18A	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	1	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	3		
W-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-18A	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-18A	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	Dry.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	Dry.
W-854-19	PTWM	Qls-Tnbs1	O	CMP	E601:ALL	2	N	Dry.
W-854-45	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-45	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1701	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1701	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1701	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-1706	PTWM	Qls-Tnbs1	A	CMP	E300.0:NO3	2	N	Dry.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	2	N	Dry.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E300.0:PERC	4		
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	2	N	Dry.
W-854-1706	PTWM	Qls-Tnbs1	S	CMP	E601:ALL	4		
W-854-1707	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1707	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1731	PTWM	Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1731	PTWM	Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1731	PTWM	Tnsc0	S	CMP	E601:ALL	4		
W-854-1822	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	

Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-854-1822	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1823	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-1823	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-1902	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	N	Dry.
W-854-1902	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-2115	PTWM	Tnbs1-Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E300.0:PERC	4		
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-2115	PTWM	Tnbs1-Tnsc0	S	CMP	E601:ALL	4		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:NO3	4		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E300.0:PERC	4		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	1	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	2	Y	
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	3		
W-854-2139	EW	Tnbs1-Tnsc0	Q	DIS-TF	E601:ALL	4		
W-854-2218	EW	Tnbs1-Tnsc0	A	CMP-TF	E300.0:NO3	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	1	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E300.0:PERC	3		
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E300.0:PERC	4		
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	1	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	2	Y	
W-854-2218	EW	Tnbs1-Tnsc0	S	DIS-TF	E601:ALL	3		
W-854-2218	EW	Tnbs1-Tnsc0	S	CMP-TF	E601:ALL	4		
W-854-2611	PTMW	Tnbs1/Tnsc0	A	CMP	E300.0:NO3	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E300.0:PERC	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E300.0:PERC	4		
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E601:ALL	2	Y	
W-854-2611	PTMW	Tnbs1/Tnsc0	S	CMP	E601:ALL	4		
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:NO3	2	N	Dry.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E300.0:PERC	2	N	Dry.
W-854-F2	PTWM	Qls-Tnbs1	O	CMP	E601:ALL	2	N	Dry.

Table 2.6-8. Building 854-Source (854-SRC) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-SRC	January	60	6.0	0.035	12	NA	NA
	February	19	13	0.58	15	NA	NA
	March	77	4.5	0	9.6	NA	NA
	April	94	9.4	0.48	14	NA	NA
	May	81	18	1.0	26	NA	NA
	June	73	11	0.47	18	NA	NA
Total		400	62	2.6	96	NA	NA

Table 2.6-9. Building 854-Proximal (854-PRX) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-PRX	January	NA	0	0	0	NA	NA
	February	NA	0.063	0.032	0.15	NA	NA
	March	NA	0.61	0.55	2.7	NA	NA
	April	NA	4.9	1.9	10	NA	NA
	May	NA	3.2	1.2	6.7	NA	NA
	June	NA	1.4	0.54	2.9	NA	NA
Total		NA	10	4.2	22	NA	NA

Table 2.6-10. Building 854-Distal (854-DIS) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
854-DIS	January	NA	0	0	0	NA	NA
	February	NA	0.072	0	0.048	NA	NA
	March	NA	0.11	0	0.072	NA	NA
	April	NA	0.16	0.028	0.11	NA	NA
	May	NA	0.13	0.022	0.083	NA	NA
	June	NA	0.11	0.018	0.070	NA	NA
Total		NA	0.58	0.067	0.38	NA	NA

Table 2.7-1. Building 832-Source (832-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
832-SRC	January	192	192	39	2,496
	February	240	240	37	1,767
	March	456	456	78	5,852
	April	720	720	160	8,853
	May	696	696	187	9,461
	June	648	648	154	9,859
Total		2,952	2,952	655	38,288

Table 2.7-2. Building 830-Source (830-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
830-SRC	January	0	318	0	229,703
	February	20065	307	1	194,776
	March	565	539	678	138,612
	April	840	824	1,130	208,251
	May	696	690	992	254,953
	June	624	585	918	190,583
Total		22,790	3,263	3,719	1,216,878

Table 2.7-3. Building 830-Distal South (830-DISS) volumes of ground water and soil vapor extracted and discharged, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS Operational hours	GWTS Operational hours	Volume of vapor extracted (thousands of cf)	Volume of ground water discharged (gal)
830-DISS	January	NA	96	NA	6,900
	February	NA	72	NA	18,700
	March	NA	288	NA	48,067
	April	NA	264	NA	41,545
	May	NA	384	NA	66,846
	June	NA	648	NA	151,062
Total		NA	1,752	NA	333,120

Table 2.7-4. Building 832 Canyon Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Location	Date	TCE (μg/L)	PCE (μg/L)	cis-1,2-DCE (μg/L)	trans-1,2-DCE (μg/L)	Carbon tetra-chloride (μg/L)	Chloro-form (μg/L)	1,1-DCA (μg/L)	1,2-DCA (μg/L)	1,1-DCE (μg/L)	1,1,1-TCA (μg/L)	1,1,2-TCA (μg/L)	Freon 11 (μg/L)	Freon 113 (μg/L)	Vinyl chloride (μg/L)
Building 830-Distal South[a]															
Building 830-Source[b]															
830-SRC-I	3/4/13	440 D	0.93	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-I	4/2/13	960 D	1.1	1.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-I[c]	4/2/13 DUP	960 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D	<25 D
830-SRC-I2	1/14/13	15	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-I2	4/2/13	14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	1/14/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	2/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	3/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	4/2/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	5/6/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
830-SRC-E	6/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Building 832-Source[d]															
832-SRC-I	2/25/13	43	<0.5	0.82	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-I	4/3/13	170 D	<0.5	2.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-I[c]	4/3/13 DUP	140 D	<0.5	3.3	<0.5	<0.5	0.62	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	2/25/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	3/4/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	4/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	5/6/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
832-SRC-E	6/3/13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes appear on the following page.

Table 2.7-4 (Cont.). Building 832 Canyon Operable Unit volatile organic compounds (VOCs) in ground water extraction and treatment system influent and effluent.

Notes:

[a] No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.

[b] No primary influent monitoring conducted until March due to low production wells being offline for freeze protection.

[c] Duplicate influent sampling and analysis as part of the QA/QC process.

[d] No influent or effluent monitoring conducted in January due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-4 (Cont.). Analyte detected but not reported in main table.

Location	Date	Detection frequency	1,2-DCE (Total) (µg/l)
Building 830-Distal South[a]			
Building 830-Source[b]			
830-SRC-I	**3/4/13**	**0 of 18**	**–**
830-SRC-I	**4/2/13**	**1 of 18**	**1.8**
830-SRC-I[c]	**4/2/13 DUP**	**0 of 18**	**–**
830-SRC-I2	**1/14/13**	**0 of 18**	**–**
830-SRC-I2	**4/2/13**	**0 of 18**	**–**
830-SRC-E	**1/14/13**	**0 of 18**	**–**
830-SRC-E	**2/4/13**	**0 of 18**	**–**
830-SRC-E	**3/4/13**	**0 of 18**	**–**
830-SRC-E	**4/2/13**	**0 of 18**	**–**
830-SRC-E	**5/6/13**	**0 of 18**	**–**
830-SRC-E	**6/3/13**	**0 of 18**	**–**
Building 832-Source[d]			
832-SRC-I	**2/25/13**	**0 of 18**	**–**
832-SRC-I	**4/3/13**	**1 of 18**	**2.4**
832-SRC-I[c]	**4/3/13 DUP**	**1 of 18**	**3.3**
832-SRC-E	**2/25/13**	**0 of 18**	**–**
832-SRC-E	**3/4/13**	**0 of 18**	**–**
832-SRC-E	**4/3/13**	**0 of 18**	**–**
832-SRC-E	**5/6/13**	**0 of 18**	**–**
832-SRC-E	**6/3/13**	**0 of 18**	**–**

Notes:

[a] **No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.**

[b] **No primary influent monitoring conducted until March due to low production wells being offline for freeze protection.**

[c] **Duplicate influent sampling and analysis as part of the QA/QC process.**

[d] **No influent or effluent monitoring conducted in January due to shut down for freeze protection.**

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-5. Building 832 Canyon Operable Unit perchlorate in ground water extraction and treatment system influent and effluent.

Location	Date	Perchlorate (μg/L)
Building 830-Distal South		
830-DISS-I	**1/9/13**	**<4**
830-DISS-I	**4/2/13**	**4.3**
830-DISS-I[a]	**4/2/13 DUP**	**4.7**
830-DISS-E	**1/9/13**	**<4**
830-DISS-E	**2/27/13**	**<4**
830-DISS-E	**3/4/13**	**<4**
830-DISS-E	**4/2/13**	**<4**
830-DISS-E	**5/6/13**	**<4**
830-DISS-E	**6/3/13**	**<4**
Building 830-Source[b]		
830-SRC-I	**3/4/13**	**<4**
830-SRC-I	**4/2/13**	**5.4**
830-SRC-I[a]	**4/2/13 DUP**	**5.1**
830-SRC-E	**1/14/13**	**<4**
830-SRC-E	**2/4/13**	**<4**
830-SRC-E	**3/4/13**	**<4**
830-SRC-E	**4/2/13**	**<4**
830-SRC-E	**5/6/13**	**<4**
830-SRC-E	**6/3/13**	**<4**
Building 832-Source[c]		
832-SRC-I	**2/25/13**	**6.1**
832-SRC-I	**4/3/13**	**6.0**
832-SRC-I[a]	**4/3/13 DUP**	**5.9**
832-SRC-E	**2/25/13**	**<4**
832-SRC-E	**3/4/13**	**<4**
832-SRC-E	**4/3/13**	**<4**
832-SRC-E	**5/6/13**	**<4**
832-SRC-E	**6/3/13**	**<4**

Notes:

[a] Duplicate influent sampling and analysis as part of the QA/QC process.

[b] No primary influent monitoring conducted until March due to low production wells being offline for freeze protection.

[c] No influent or effluent monitoring conducted in January due to shut down for freeze protection.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-6. Building 832 Canyon Operable Unit treatment facility sampling and analysis plan.

Sample location	Sample identification	Parameter	Frequency
832-SRC GWTS			
Influent Port	**832-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		pH	**Quarterly**
Effluent Port	**832-SRC-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		PH	**Monthly**
832-SRC SVTS			
Influent Port	**832-SRC-VI**	**No Monitoring Requirements**	
Effluent Port	**832-SRC-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**832-SRC-VCF3I**	**VOCs**	**Weekly[a]**
830-SRC GWTS			
Influent Port	**830-SRC-I**	**VOCs**	**Quarterly**
		Perchlorate	**Quarterly**
		PH	**Quarterly**
Effluent Port	**830-SRC-E**	**VOCs**	**Monthly**
		Perchlorate	**Monthly**
		PH	**Monthly**
830-SRC SVTS			
Influent Port	**830-SRC-VI**	**No Monitoring Requirements**	
Effluent Port	**830-SRC-VE**	**VOCs**	**Weekly[a]**
Intermediate GAC	**830-SRC-VCF3I**	**VOCs**	**Weekly[a]**
830-DISS GWTS			
Influent Port	**830-DISS-I**	**Perchlorate**	**Quarterly**
		pH	**Quarterly**
Effluent Port	**830-DISS-E**	**Perchlorate**	**Monthly**
		pH	**Monthly**

Notes:

[a] Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
SPRING3	SPR	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SPRING3	SPR	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SPRING3	SPR	Qal/WBR	S	CMP	E601:ALL	1	Y	
SPRING3	SPR	Qal/WBR	S	CMP	E601:ALL	3		
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:NO3	1	N	Dry.
SPRING4	SPR	Tpsg-Tps	O	CMP	E300.0:PERC	1	N	Dry.
SPRING4	SPR	Tpsg-Tps	O	CMP	E601:ALL	1	N	Dry.
SVI-830-031	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-031	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-031	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-031	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-032	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-032	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-032	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-033	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-033	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-033	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
SVI-830-035	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
SVI-830-035	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
SVI-830-035	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
SVI-830-035	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-04A	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-04A	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-04A	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-04A	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-05	PTMW	Tnsc1c	A	CMP	E300.0:NO3	1	Y	
W-830-05	PTMW	Tnsc1c	A	CMP	E300.0:PERC	1	Y	
W-830-05	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-05	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-07	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-830-07	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-830-07	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-830-07	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	Y	
W-830-09	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	Y	
W-830-09	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-09	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-10	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-10	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-10	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-10	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-11	PTMW	Tnsc1c	A	CMP	E300.0:NO3	1	Y	
W-830-11	PTMW	Tnsc1c	A	CMP	E300.0:PERC	1	Y	
W-830-11	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-11	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-12	GW	LTnbs1	Q	DIS	AS:UISO	1	Y	
W-830-12	GW	LTnbs1	S	CMP	E300.0:NO3	1	Y	
W-830-12	GW	LTnbs1	S	CMP	E300.0:NO3	3		

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-12	GW	LTnbs1	S	CMP	E300.0:PERC	1	Y	
W-830-12	GW	LTnbs1	S	CMP	E300.0:PERC	3		
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	1	Y	
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	2	Y	
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	3		
W-830-12	GW	LTnbs1	Q	CMP	E601:ALL	4		
W-830-12	GW	LTnbs1	Q	DIS	E9060:ALL	1	Y	
W-830-12	GW	LTnbs1	Q	DIS	GENMIN:ALL	1	Y	
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-830-13	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-830-13	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-830-13	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-830-13	PTMW	Tnbs2	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-830-14	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-830-14	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-14	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-15	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:NO3	3		
W-830-15	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-830-15	GW	UTnbs1	S	CMP	E300.0:PERC	3		
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	2	Y	
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	3		
W-830-15	GW	UTnbs1	Q	CMP	E601:ALL	4		
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	Y	
W-830-16	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-16	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-16	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-830-17	PTMW	Tnbs2	A	CMP	E300.0:PERC	1	Y	
W-830-17	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-830-17	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-830-18	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-830-18	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-18	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-19	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-19	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-19	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-19	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-19	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-19	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-19	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-830-20	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-830-20	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-20	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-21	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-21	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-21	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-21	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-22	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-22	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-22	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-22	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-25	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-25	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-25	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:NO3	1	N	To be sampled in 2014.
W-830-26	PTMW	UTnbs1	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-830-26	PTMW	UTnbs1	S	CMP	E601:ALL	1	N	Dry.
W-830-26	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-27	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-27	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-27	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-27	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	Y	
W-830-28	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	Y	
W-830-28	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-28	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-830-29	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-830-29	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-830-29	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-830-30	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-830-30	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
W-830-30	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-830-30	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-34	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-830-34	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	Y	
W-830-34	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-830-34	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-830-34	PTMW	Qal/WBR	E	CMP	E8330LOW:ALL	1	N	To be sampled in 2014.
W-830-49	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-49	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-49	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-49	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-49	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-49	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-49	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-50	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-50	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-50	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-50	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-51	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-51	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-51	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-51	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-51	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-51	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-51	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-52	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-52	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-52	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-52	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-52	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-52	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-52	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-53	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-53	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-53	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-53	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-53	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-53	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-53	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:NO3	1	Y	
W-830-54	PTMW	Tnsc1c	O	CMP	E300.0:PERC	1	Y	
W-830-54	PTMW	Tnsc1c	S	CMP	E601:ALL	1	Y	
W-830-54	PTMW	Tnsc1c	S	CMP	E601:ALL	3		
W-830-55	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-55	PTMW	Tnsc1b	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-830-55	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-55	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-56	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-56	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-56	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-56	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-57	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-57	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-57	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-57	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-57	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-57	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
W-830-58	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-58	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-58	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-58	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-59	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-59	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-59	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-59	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-59	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-59	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-59	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-60	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-60	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-60	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-60	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-60	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-60	EW	UTnbs1	S	DIS-TF	E601:ALL	4		
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-830-1730	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-830-1730	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-830-1807	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-830-1807	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-830-1807	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-830-1807	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-830-1829	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-1829	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-1829	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1829	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-1830	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-830-1830	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-830-1830	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1830	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:NO3	1	Y	
W-830-1831	PTMW	Tnsc1b	O	CMP	E300.0:PERC	1	Y	
W-830-1831	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-830-1831	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-1832	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	Y	
W-830-1832	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	Y	
W-830-1832	PTMW	UTnbs1	S	CMP	E601:ALL	1	Y	
W-830-1832	PTMW	UTnbs1	S	CMP	E601:ALL	3		
W-830-2213	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-830-2213	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-830-2213	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Insufficient water.
W-830-2213	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-830-2214	EW	Tnsc1a	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2214	EW	Tnsc1a	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2214	EW	Tnsc1a	A	DIS-TF	E300.0:PERC	3		
W-830-2214	EW	Tnsc1a	S	CMP-TF	E601:ALL	1	Y	
W-830-2214	EW	Tnsc1a	S	DIS-TF	E601:ALL	2	Y	
W-830-2214	EW	Tnsc1a	S	CMP-TF	E601:ALL	3		
W-830-2214	EW	Tnsc1a	S	DIS-TF	E601:ALL	4		
W-830-2215	EW	UTnbs1	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2215	EW	UTnbs1	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2215	EW	UTnbs1	S	CMP-TF	E601:ALL	1	Y	
W-830-2215	EW	UTnbs1	S	DIS-TF	E601:ALL	2	Y	
W-830-2215	EW	UTnbs1	S	CMP-TF	E601:ALL	3		
W-830-2215	EW	UTnbs1	S	DIS-TF	E601:ALL	4		

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-830-2216	EW	Tnbs2	A	CMP-TF	E300.0:NO3	1	Y	
W-830-2216	EW	Tnbs2	A	CMP-TF	E300.0:PERC	1	Y	
W-830-2216	EW	Tnbs2	A	DIS-TF	E300.0:PERC	3		
W-830-2216	EW	Tnbs2	S	CMP-TF	E601:ALL	1	Y	
W-830-2216	EW	Tnbs2	S	DIS-TF	E601:ALL	2	Y	
W-830-2216	EW	Tnbs2	S	CMP-TF	E601:ALL	3		
W-830-2216	EW	Tnbs2	S	DIS-TF	E601:ALL	4		
W-830-2216	EW	Tnbs2	O	CMP-TF	E8330LOW:ALL	3		
W-830-2311	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-830-2311	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-830-2311	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-830-2311	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:NO3	1	Y	
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:NO3	3		
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:PERC	1	Y	
W-830-2701	PTMW	Tnsc1a	S	CMP	E300.0:PERC	3		
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	1	Y	
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	2	Y	
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	3		
W-830-2701	PTMW	Tnsc1a	Q	CMP	E601:ALL	4		
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:NO3	1	Y	
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:NO3	3		
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:PERC	1	Y	
W-830-2806	PTMW	Tnsc1a	S	CMP	E300.0:PERC	3		
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	1	Y	
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	2	Y	
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	3		
W-830-2806	PTMW	Tnsc1a	Q	CMP	E601:ALL	4		
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:NO3	1	Y	
W-831-01	PTMW	LTnbs1	O	CMP	E300.0:PERC	1	Y	
W-831-01	PTMW	LTnbs1	O	CMP	E601:ALL	1	Y	
W-832-01	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-01	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-01	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-01	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-01	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-01	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-01	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-06	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-832-06	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-832-06	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-832-06	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-832-09	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-832-09	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-832-09	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-832-10	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-10	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-10	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-10	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-10	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-11	EW	Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-11	EW	Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-11	EW	Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-11	EW	Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-11	EW	Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-11	EW	Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-12	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-12	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-12	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-12	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-13	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-13	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-13	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-13	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		
W-832-14	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-832-14	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-832-14	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Insufficient water.
W-832-14	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-15	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:NO3	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:NO3	3		
W-832-15	EW	Qal/WBR-Tnsc1b	A	CMP-TF	E300.0:PERC	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	A	DIS-TF	E300.0:PERC	3		
W-832-15	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	1	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	2	Y	
W-832-15	EW	Qal/WBR-Tnsc1b	S	CMP-TF	E601:ALL	3		
W-832-15	EW	Qal/WBR-Tnsc1b	S	DIS-TF	E601:ALL	4		
W-832-15	EW	Qal/WBR-Tnsc1b	E	CMP-TF	E8330LOW:ALL	2	N	To be sampled in 2014.
W-832-16	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Insufficient water.
W-832-16	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Insufficient water.
W-832-16	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Insufficient water.
W-832-16	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-17	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-17	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-17	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-17	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-18	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-18	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-19	PTMW	Qal/WBR-Tnsc1b	S	CMP	E601:ALL	3		

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-20	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	N	Dry.
W-832-20	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	N	Dry.
W-832-20	PTMW	Tnsc1b	S	CMP	E601:ALL	1	N	Dry.
W-832-20	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-21	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-21	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-832-21	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-21	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-22	PTMW	UTnbs1	A	CMP	E300.0:NO3	1	N	Dry.
W-832-22	PTMW	UTnbs1	A	CMP	E300.0:PERC	1	N	Dry.
W-832-22	PTMW	UTnbs1	S	CMP	E601:ALL	1	N	Dry.
W-832-23	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-23	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-23	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-23	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-24	PTMW	Tnsc1a	A	CMP	E300.0:NO3	1	Y	
W-832-24	PTMW	Tnsc1a	A	CMP	E300.0:PERC	1	Y	
W-832-24	PTMW	Tnsc1a	S	CMP	E601:ALL	1	Y	
W-832-24	PTMW	Tnsc1a	S	CMP	E601:ALL	3		
W-832-25	EW	Tnsc1a	A	CMP-TF	E300.0:NO3	1	Y	
W-832-25	EW	Tnsc1a	A	CMP-TF	E300.0:PERC	1	Y	
W-832-25	EW	Tnsc1a	A	DIS-TF	E300.0:PERC	3		
W-832-25	EW	Tnsc1a	S	CMP-TF	E601:ALL	1	Y	
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	2	Y	
W-832-25	EW	Tnsc1a	S	CMP-TF	E601:ALL	3		
W-832-25	EW	Tnsc1a	S	DIS-TF	E601:ALL	4		
W-832-1927	PTMW	Tnsc1b	A	CMP	E300.0:NO3	1	Y	
W-832-1927	PTMW	Tnsc1b	A	CMP	E300.0:PERC	1	Y	
W-832-1927	PTMW	Tnsc1b	S	CMP	E601:ALL	1	Y	
W-832-1927	PTMW	Tnsc1b	S	CMP	E601:ALL	3		
W-832-2112	GW	UTnbs1	S	CMP	E300.0:NO3	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:NO3	3		
W-832-2112	GW	UTnbs1	S	CMP	E300.0:PERC	1	Y	
W-832-2112	GW	UTnbs1	S	CMP	E300.0:PERC	3		
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	1	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	2	Y	
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	3		
W-832-2112	GW	UTnbs1	Q	CMP	E601:ALL	4		
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC1	PTMW	Qal/WBR	A	CMP	E300.0:PERC	1	N	Dry.
W-832-SC1	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC1	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-SC2	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-832-SC2	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC2	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-832-SC3	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	Y	
W-832-SC3	PTMW	Qal/WBR	O	CMP	E300.0:PERC	1	Y	
W-832-SC3	PTMW	Qal/WBR	S	CMP	E601:ALL	1	Y	
W-832-SC3	PTMW	Qal/WBR	S	CMP	E601:ALL	3		

Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-832-SC4	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-832-SC4	PTMW	Qal/WBR	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-832-SC4	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-832-SC4	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-870-01	PTMW	Qal/WBR	A	CMP	E300.0:NO3	1	N	Dry.
W-870-01	PTMW	Qal/WBR	O	CMP	E300.0:PERC	1	N	Dry.
W-870-01	PTMW	Qal/WBR	S	CMP	E601:ALL	1	N	Dry.
W-870-01	PTMW	Qal/WBR	S	CMP	E601:ALL	3		
W-870-02	PTMW	Tnbs2	A	CMP	E300.0:NO3	1	Y	
W-870-02	PTMW	Tnbs2	E	CMP	E300.0:PERC	1	N	To be sampled in 2014.
W-870-02	PTMW	Tnbs2	S	CMP	E601:ALL	1	Y	
W-870-02	PTMW	Tnbs2	S	CMP	E601:ALL	3		
W-880-01	GW	Tnbs2	S	CMP	E300.0:NO3	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:NO3	3		
W-880-01	GW	Tnbs2	S	CMP	E300.0:PERC	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E300.0:PERC	3		
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	1	Y	
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	2	Y	
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	3		
W-880-01	GW	Tnbs2	Q	CMP	E601:ALL	4		
W-880-01	GW	Tnbs2	S	CMP	E8330LOW:ALL	1	Y	
W-880-01	GW	Tnbs2	S	CMP	E8330LOW:ALL	3		
W-880-02	GW	Qal/WBR	S	CMP	E300.0:NO3	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E300.0:NO3	3		
W-880-02	GW	Qal/WBR	S	CMP	E300.0:PERC	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E300.0:PERC	3		
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	1	Y	
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	2	Y	
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	3		
W-880-02	GW	Qal/WBR	Q	CMP	E601:ALL	4		
W-880-02	GW	Qal/WBR	S	CMP	E8330LOW:ALL	1	Y	
W-880-02	GW	Qal/WBR	S	CMP	E8330LOW:ALL	3		
W-880-03	GW	Tnsc1b	S	CMP	E300.0:NO3	1	Y	
W-880-03	GW	Tnsc1b	S	CMP	E300.0:NO3	3		
W-880-03	GW	Tnsc1b	S	CMP	E300.0:PERC	1	Y	
W-880-03	GW	Tnsc1b	S	CMP	E300.0:PERC	3		
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	1	Y	
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	2	Y	
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	3		
W-880-03	GW	Tnsc1b	Q	CMP	E601:ALL	4		
W-880-03	GW	Tnsc1b	S	CMP	E8330LOW:ALL	1	Y	
W-880-03	GW	Tnsc1b	S	CMP	E8330LOW:ALL	3		

Table 2.7-8. Building 832-Source (832-SRC) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
832-SRC	January	1.1	0.36	0.055	1.0	NA	NA
	February	0.36	0.28	0.040	0.73	NA	NA
	March	0.76	1.2	0.14	2.5	NA	NA
	April	2.9	1.9	0.22	3.7	NA	NA
	May	3.4	1.9	0.24	4.0	NA	NA
	June	2.8	1.9	0.24	4.2	NA	NA
Total		11	7.4	0.94	16	NA	NA

Table 2.7-9. Building 830-Source (830-SRC) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
830-SRC	January	0	16	0	2.3	NA	NA
	February	0.13	55	0.12	5.4	NA	NA
	March	86	170	0.87	16	NA	NA
	April	130	220	1.0	20	NA	NA
	May	66	140	0.54	13	NA	NA
	June	62	96	0.36	9.1	NA	NA
Total		340	690	2.9	66	NA	NA

Table 2.7-10. Building 830-Distal South (830-DISS) mass removed, January 1, 2013 through June 30, 2013.

Treatment facility	Month	SVTS VOC mass removed (g)	GWTS VOC mass removed (g)	Perchlorate mass removed (g)	Nitrate mass removed (kg)	RDX mass removed (g)	TBOS/TKEBS mass removed (g)
830-DISS	January	NA	0.73	0	1.9	NA	NA
	February	NA	2.0	0	5.2	NA	NA
	March	NA	3.7	0	12	NA	NA
	April	NA	2.5	0	10	NA	NA
	May	NA	3.7	0	16	NA	NA
	June	NA	7.8	0	35	NA	NA
Total		NA	20	0	80	NA	NA

Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K8-01	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	4		
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-01	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
K8-02B	DMW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	N	Inoperable pump.
K8-02B	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.
K8-03B	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E601:ALL	4		
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-03B	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
K8-04	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	AS:UISO	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E200.7:LI	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:NO3	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E300.0:PERC	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E340.2:ALL	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E601:ALL	2	N	Dry.

Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E8330LOW:ALL	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	E906:ALL	2	N	Dry.
K8-05	DMW	Tnbs1-Tnbs0	O	CMP	T26METALS:ALL	2	N	Dry.

Table 2.8-2. Building 833 area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-833-03	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-12	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Insufficient water.
W-833-18	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-22	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-28	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Insufficient water.
W-833-30	PTMW	LTnbs1	S	CMP	E601:ALL	1	Y	
W-833-30	PTMW	LTnbs1	S	CMP	E601:ALL	3		
W-833-33	PTMW	Tpsg	A	CMP	E601:ALL	1	Y	
W-833-34	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-833-43	PTMW	Tpsg	A	CMP	E601:ALL	1	N	Dry.
W-840-01	PTMW	LTnbs1	A	CMP	E300.0:NO3	1	Y	
W-840-01	PTMW	LTnbs1	A	CMP	E300.0:PERC	1	Y	
W-840-01	PTMW	LTnbs1	A	CMP	E601:ALL	1	Y	
W-841-01	PTMW	UTnbs1	O	CMP	E300.0:NO3	1	N	Dry.
W-841-01	PTMW	UTnbs1	O	CMP	E300.0:PERC	1	N	Dry.
W-841-01	PTMW	UTnbs1	A	CMP	E601:ALL	1	N	Dry.

Table 2.8-3. Building 845 Firing Table and Pit 9 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-01	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	DIS	MS:UISO	2	Y	
K9-02	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E200.7:LI	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	Y	
K9-03	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	Y	
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E300.0:PERC	2	N	Inoperable pump.
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E601:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	E906:ALL	2	N	Inoperable pump.
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	MS:UISO	2	N	Inoperable pump.
K9-04	DMW	Tnbs1/Tnbs0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.

Table 2.8-4. Building 851 area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-851-05	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-05	PTMW	Tmss	O	CMP	E601:ALL	2	Y	
W-851-05	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-06	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-06	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-07	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-07	PTMW	Tmss	A	CMP	MS:UISO	2	Y	
W-851-08	PTMW	Tmss	A	CMP	AS:UISO	4		
W-851-08	PTMW	Tmss	A	CMP	MS:UISO	2	Y	

Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	N	Inoperable pump.
K2-01C	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	N	Inoperable pump.
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
NC2-08	DMW	Tnbs1-Tnbs0	A	DIS	MS:UISO	2	Y	
NC2-08	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT2-1934	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E200.7:LI	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E340.2:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E601:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	E8330LOW:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	MS:UISO	2	Y	
W-PIT2-1935	DMW	Tnbs1-Tnbs0	A	CMP	T26METALS:ALL	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	AS:UISO	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	S	CMP	E300.0:NO3	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	1	Y	

Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.

Sample Location	Location Type	Hydro Unit	Sampling Frequency	Sample Driver	Requested Analysis	Sampling Quarter	Sampled Y/N	Comment
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	3		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E300.0:PERC	4		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	1	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	2	Y	
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	3		
W-PIT2-2226	GW	Tnbs1-Tnbs0	Q	CMP	E906:ALL	4		
W-PIT2-2301	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT2-2301	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2301	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Insufficient water.
W-PIT2-2302	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2302	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Insufficient water.
W-PIT2-2303	PTMW	Qal/WBR	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E300.0:PERC	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E300.0:PERC	4		
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E906:ALL	2	N	Dry.
W-PIT2-2303	PTMW	Qal/WBR	S	CMP	E906:ALL	4		
W-PIT2-2303	PTMW	Qal/WBR	A	CMP	MS:UISO	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	A	CMP	AS:UISO	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	A	CMP	E300.0:NO3	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E300.0:PERC	4		
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	2	N	Dry.
W-PIT2-2304	PTMW	Tnbs1-Tnbs0	S	CMP	E906:ALL	4		

Appendix A

Results of Influent and Effluent pH Monitoring

Appendix A

Results of Influent and Effluent pH Monitoring

Table A-1. Results of influent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2013.

A-1. Results of infuent and effluent pH, January through June 2013.

Sample Location	Sample Date	Effluent pH Result
GSA OU		
CGSA GWTS	**01/09/2013**	**7.2**
CGSA GWTS	**02/04/2013**	**7.2**
CGSA GWTS	**03/04/2013**	**7.0**
CGSA GWTS	**04/08/2013**	**7.2**
CGSA GWTS	**05/06/2013**	**7.0**
CGSA GWTS	**06/03/2013**	**7.2**
Building 834 OU		
834 GWTS	**01/31/2013**	**NM**
834 GWTS	**02/19/2013**	**7.9**
834 GWTS	**03/04/2013**	**7.5**
834 GWTS	**04/03/2013**	**7.8**
834 GWTS	**05/06/2013**	**7.9**
834 GWTS	**06/03/2013**	**8.1**
HEPA OU		
815-SRC GWTS	**01/23/2013**	**7.2**
815-SRC GWTS	**02/05/2013**	**7.4**
815-SRC GWTS	**03/04/2013**	**7.3**
815-SRC GWTS	**04/03/2013**	**7.3**
815-SRC GWTS	**05/06/2013**	**7.4**
815-SRC GWTS	**06/04/2013**	**7.4**
815-PRX GWTS	**01/31/2013**	**NM**
815-PRX GWTS	**02/28/2013**	**NM**
815-PRX GWTS	**03/05/2013**	**7.3**
815-PRX GWTS	**04/08/2013**	**7.3**
815-PRX GWTS	**05/06/2013**	**7.9**
815-PRX GWTS	**06/04/2013**	**7.9**
815-DSB GWTS	**01/08/2013**	**7.0**
815-DSB GWTS	**02/04/2013**	**7.0**

A-1. Results of infuent and effluent pH, January through June 2013.

Sample Location	Sample Date	Effluent pH Result
815-DSB GWTS	**03/04/2013**	**7.0**
815-DSB GWTS	**04/03/2013**	**7.0**
815-DSB GWTS	**05/06/2013**	**7.0**
815-DSB GWTS	**06/08/2013**	**7.0**
817-SRC GWTS	**01/31/2013**	**NM**
817-SRC GWTS	**02/25/2013**	**7.8**
817-SRC GWTS	**03/04/2013**	**7.7**
817-SRC GWTS	**04/02/2013**	**7.0**
817-SRC GWTS	**05/06/2013**	**7.7**
817-SRC GWTS	**06/04/2013**	**7.8**
817-PRX GWTS	**01/24/2013**	**8.3**
817-PRX GWTS	**02/05/2013**	**7.7**
817-PRX GWTS	**03/04/2013**	**7.6**
817-PRX GWTS	**04/02/2013**	**7.5**
817-PRX GWTS	**05/06/2013**	**7.4**
817-PRX GWTS	**06/30/2013**	**NM**
829-SRC GWTS	**01/31/2013**	**NM**
829-SRC GWTS	**02/28/2013**	**NM**
829-SRC GWTS	**03/31/2013**	**NM**
829-SRC GWTS	**04/30/2013**	**NM**
829-SRC GWTS	**05/20/2013**	**7.0**
829-SRC GWTS	**06/10/2013**	**7.2**
Building 850/Pit 7 Complex OU		
PIT7-SRC GWTS	**01/09/2013**	**7.0**
PIT7-SRC GWTS	**02/04/2013**	**7.0**
PIT7-SRC GWTS	**03/04/2013**	**7.0**
PIT7-SRC GWTS	**04/03/2013**	**7.0**
PIT7-SRC GWTS	**05/06/2013**	**7.0**
PIT7-SRC GWTS	**06/10/2013**	**7.0**

A-1. Results of infuent and effluent pH, January through June 2013.

Sample Location	Sample Date	Effluent pH Result
Building 854 OU		
854-SRC GWTS	**01/08/2013**	**8.0**
854-SRC GWTS	**02/04/2013**	**7.0**
854-SRC GWTS	**03/04/2013**	**7.0**
854-SRC GWTS	**04/02/2013**	**7.0**
854-SRC GWTS	**05/06/2013**	**7.0**
854-SRC GWTS	**06/03/2013**	**7.0**
854-PRX GWTS	**01/31/2013**	**NM**
854-PRX GWTS	**02/28/2013**	**NM**
854-PRX GWTS	**03/12/2013**	**7.0**
854-PRX GWTS	**04/03/2013**	**7.0**
854-PRX GWTS	**05/07/2013**	**7.0**
854-PRX GWTS	**06/03/2013**	**7.0**
854-DIS GWTS	**01/31/2013**	**NM**
854-DIS GWTS	**02/19/2013**	**7.0**
854-DIS GWTS	**03/04/2013**	**7.0**
854-DIS GWTS	**04/02/2013**	**7.0**
854-DIS GWTS	**05/06/2013**	**7.0**
854-DIS GWTS	**06/03/2013**	**7.0**
832 Canyon OU		
832-SRC GWTS	**01/31/2013**	**NM**
832-SRC GWTS	**02/25/2013**	**7.5**
832-SRC GWTS	**03/04/2013**	**7.2**
832-SRC GWTS	**04/03/2013**	**7.3**
832-SRC GWTS	**05/06/2013**	**7.3**
832-SRC GWTS	**06/03/2013**	**7.2**
830-SRC GWTS	**01/14/2013**	**7.2**
830-SRC GWTS	**02/04/2013**	**7.2**
830-SRC GWTS	**03/04/2013**	**7.1**

A-1. Results of infuent and effluent pH, January through June 2013.

Sample Location	Sample Date	Effluent pH Result
830-SRC GWTS	**04/02/2013**	**7.4**
830-SRC GWTS	**05/06/2013**	**7.4**
830-SRC GWTS	**06/03/2013**	**7.4**
830-DISS GWTS	**01/09/2013**	**7.0**
830-DISS GWTS	**02/27/2013**	**7.0**
830-DISS GWTS	**03/04/2013**	**7.0**
830-DISS GWTS	**04/02/2013**	**7.0**
830-DISS GWTS	**05/06/2013**	**7.0**
830-DISS GWTS	**06/03/2013**	**7.0**

Notes:

834 = Building 834.
815 = Building 815.
817 = Building 817.
829 = Building 829.
854 = Building 854.
832 = Building 832.
830 = Building 830.
CGSA = Central General Services Area.
EGSA = Eastern General Services Area.
DISS = Distal south.
DSB = Distal site boundary.
GWTS = Ground water treatment system.
PRX = Proximal.
PRXN = Proximal North.
SRC = Source.
NA = Not applicable.
NM = Not measured due to facility not operating during this period.
NR = Not required.
OU = Operable unit.
pH = A measure of the acidity or alkalinity of an aqueous solution.
mg/L = milligrams per liter.

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